

RAILWAY AGE

The Standard Railroad WEEKLY for Almost a Century

Prince, West Virginia Station on the C & O . . . radiant heating.



New Hyde Park, New York, station on the Long Island . . . radiant heating.



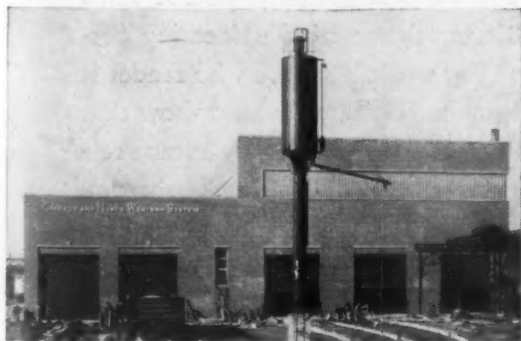
Kings Park, New York, station on the Long Island . . . radiant heating.



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WROUGHT
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TUBULAR AND HOT ROLLED PRODUCTS
ELECTRIC FURNACE QUALITY ALLOY AND STAINLESS STEEL PRODUCTS

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goes with
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Railroad
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TEXACO Railroad Lubricants
AND SYSTEMATIC ENGINEERING SERVICE

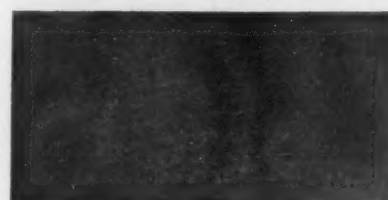



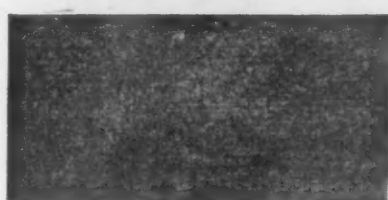







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Tests show **MAYARI R** holds paint 20% to 80% longer

A comprehensive series of tests was run to determine the relative paint-adherence of Mayari R steel and ordinary carbon steel. Five specimens of each of these steels in 4-in. by 4-in. by 1/4-in. angle sections with typical partly rusted scale surfaces were wire-brushed, and each given a coating of one of five

different types of primer paint at a uniform dry film thickness of 2.5 mils. These painted sections were then placed at a 45-degree angle in a corrosive industrial atmosphere. After the specimens had been exposed under identical conditions for the same period of time, adherence results were as shown below.

	<p>MAYARI R PRIMER A CARBON STEEL</p> <p><i>Special zinc chromate, linseed oil; synthetic resin primer</i></p> <p>This primer lasted 80 pct longer on Mayari R (left) than on carbon steel (right).</p>	
	<p>MAYARI R PRIMER B CARBON STEEL</p> <p><i>Red lead, linseed oil primer</i></p> <p>Mayari R (left) showed 20 pct longer paint life than did carbon steel (right), both coated with this primer.</p>	
	<p>MAYARI R PRIMER C CARBON STEEL</p> <p><i>Red lead, iron oxide, linseed oil; synthetic resin primer</i></p> <p>With this primer, Mayari R (left) retained its coating 35 pct longer than carbon steel (right).</p>	
	<p>MAYARI R PRIMER D CARBON STEEL</p> <p><i>Red lead, iron oxide; synthetic resin primer</i></p> <p>Mayari R (left) proved to have 35 pct greater paint adherence than carbon steel (right) when this primer was used on both.</p>	
	<p>MAYARI R PRIMER E CARBON STEEL</p> <p><i>Zinc chromate, linseed oil; synthetic resin primer</i></p> <p>When this primer was used, Mayari R (left) proved to have 75 pct longer paint life than carbon steel (right).</p>	

This research investigation, confirmed by the experience of Mayari R users in many industrial applications, shows how important savings in paint and labor are made possible through the use of Mayari R low-alloy, high-tensile, corrosion-resisting steel.

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3. Renewal of rail on *one track instead of two* for a distance of 62 miles . . . and the installation of C.T.C. . . . saved \$1,500,000.00.

* Factual data will be supplied upon request.



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RAILWAY AGE

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September 21, 1953

Vol. 135, No. 12

Week at a Glance

De-regulation of railroads, and of transportation generally, was warmly endorsed by two high ranking speakers, one representing industry and one government, at the American Society of Traffic and Transportation's Pittsburgh conference. But, one of them warned, transportation "must not hide behind the skirts of government regulation" to avoid self-improvement. 11

The Atlantic cut-off—the Rock Island's biggest single improvement project—was officially opened, with appropriate festivities, September 14. 11

"Limousine service" can't be provided by a transportation industry obliged to get along on "wheelbarrow income," says new Interstate Commerce Commissioner Owen F. Clarke. At the same time, Mr. Clarke believes, transportation should provide the best service possible with what funds it has available. 15

Railroad capital outlays for 1953 are now estimated at \$1¼ billion. An I.C.C. breakdown indicates this would include more than was spent in 1952 for road facilities, but less for equipment. 16

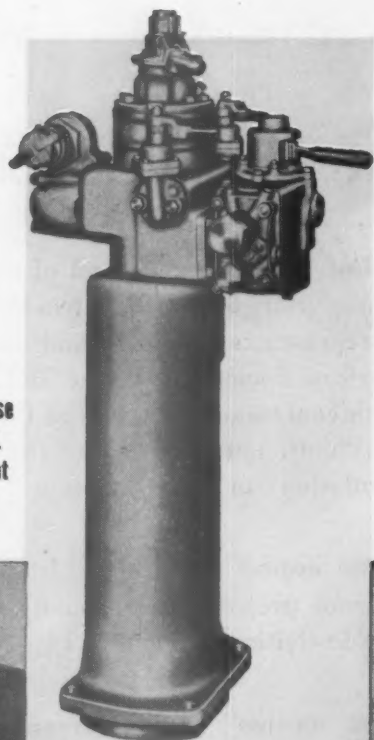
"Let's take the train" was the subject of a major promotional effort undertaken jointly by the Santa Fe and a large Kansas City department store. 19

RAILWAY AGE FORUM:

"Further deterioration" in government treatment of railroads is about the only possible capsule comment on the Post Office Department's decision to move some first-class mail by air. It is further evidence of the disparity between railroads' cost factors and their regulation-strait-jacketed rate structure. 85

"Nothing can replace intelligent personal salesmanship" in winning and holding railroad traffic, in the

"Boy! He handles that thing just like a taxi!"

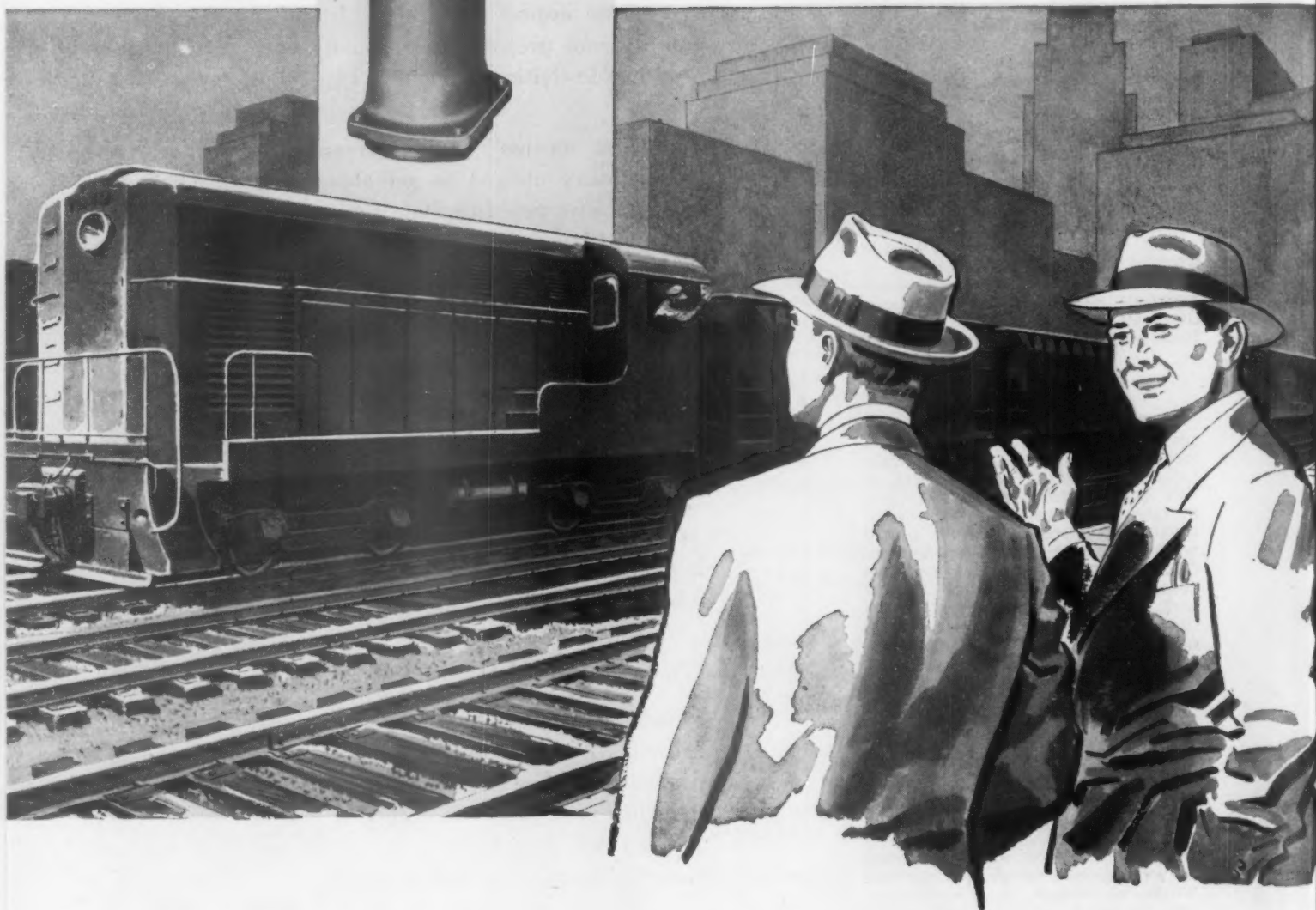


The Westinghouse
Air Brake 6-SL
Brake Equipment

THE day is gone when yard locomotive engineers spent more time controlling the locomotive than they did switching cars. Now, with the aid of Westinghouse 6-SL Brake Equipment, yard locomotives are controlled easily and accurately, and the engineer can devote his full attention to the switching operation.

The 6-SL Brake Equipment is built specifically for yard switchers. It provides a high degree of flexibility—matching that of the Diesel switcher itself. It performs along with the Diesel, 'round the clock, and thereby contributes to the high working availability of yard switchers.

The 6-SL Brake provides all the basic functions that enable a modern yard switcher to perform most productively and economically.



✕ Westinghouse Air Brake Company

AIR BRAKE DIVISION
WILMERDING, PA.

Current Statistics

Operating revenues, seven months	
1953	\$ 6,253,137,382
1952	5,911,265,980
Operating expenses, seven months	
1953	\$ 4,724,251,168
1952	4,634,987,983
Taxes, seven months	
1953	\$ 749,886,845
1952	671,321,739
Net railway operating income, seven months	
1953	\$ 643,257,679
1952	503,724,404
Net income, estimated, seven months	
1953	\$ 490,000,000
1952	348,000,000
Average price railroad stocks	
September 15, 1953	57.43
September 16, 1952	61.68
Car loadings revenue freight	
Thirty-six weeks, 1953	26,713,892
Thirty-six weeks, 1952	25,400,944
Average daily freight car surplus	
September 12, 1953	12,381
September 13, 1952	5,817
Average daily freight car shortage	
September 12, 1953	3,205
September 13, 1953	9,270
Freight cars delivered	
August 1953	5,557
August 1952	4,537
Freight cars on order	
September 1, 1953	45,735
September 1, 1952	95,761
Freight cars held for repairs	
August 1, 1953	96,917
August 1, 1952	111,680

RAILWAY AGE IS A MEMBER OF ASSOCIATED BUSINESS PUBLICATIONS (A.B.P.) AND AUDIT BUREAU OF CIRCULATION (A. B. C.) AND IS INDEXED BY THE INDUSTRIAL ARTS INDEX AND BY THE ENGINEERING INDEX SERVICE. RAILWAY AGE INCORPORATES THE RAILWAY REVIEW, THE RAILROAD GAZETTE, AND THE RAILWAY AGE GAZETTE.

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Week at a Glance CONTINUED

opinion of some of the country's top industrial traffic managers. 86

A practical approach to selection of proper rail section was outlined in a paper prepared for the VIII Pan American Railway Congress. 87

Fairbanks-Morse "Train Masters" were tried out in seven types of service on seven eastern railroads during summer months. 90

Smaller per diem payments have come to be an important by-product of the Canadian Pacific's use of International Business Machine punch cards for car accounting. 92

What's the future of the gas-turbine? Increasing experience in actual service on the Union Pacific is rapidly providing the answer. 94

Juvenile trespassing on railroad property has been cut 75 per cent, with other incidental benefits as well, by the Baltimore & Ohio's constant, carefully planned program of reaching elementary school children. 96

Even convention-popular Chicago must have found last week a little busier than normal, with seven railroad and two railroad-supply groups holding simultaneous meetings:
Coordinated Mechanical Associations 98
Roadmasters' and Maintenance of Way and Bridge and Building Associations 106

"If railroads were free" they could and would take many now-impossible steps to give shippers better service, says Monon President Warren Brown. 102

BRIEFS

Another Trailer-on-Flatcar operation is under consideration between Jersey City, N. J., and Baltimore by

Week at a Glance CONTINUED

the Central of New Jersey, the Reading and the Baltimore & Ohio. Starting date has not yet been decided.

37½ Cents an Hour—"at least"—will be the hourly pay increase to be demanded by operating brotherhoods when the present moratorium on wage and rule negotiations expires October 1. The Brotherhood of Locomotive Engineers will seek to boost the differential over the pay of firemen to provide "an incentive for men to assume the added skill and responsibility needed in a locomotive engineer," says Grand Chief Guy L. Brown. The B.L.E. will stick by the "weight on drivers" pay rate formula.

Tax amortization "goals" will be reviewed by Defense Mobilizer Arthur S. Flemming with a view to ending fast write-off authority for industries in which defense expansion has been completed or is now considered "adequate." This could affect freight car and locomotive programs, where fast write-off certificates have passed the half-way mark on the goal originally set by O.D.M.

A sliding per diem rate will be used by the Boston & Maine to settle per diem accounts accruing from August 1. The B&M has advised car-owning roads it will pay \$2.23 for cars one to 15 years old; \$1.88 for cars 16 to 25 years old, and \$1.03 for cars over 26 years old. Using this scale, the B&M proposes for its own cars an "average" per diem rate of \$1.99.

A wage increase of two cents an hour, and perhaps three cents, may be in store for railroad employees when the next cost of living index is issued. Management and labor have reached an agreement for tying escalator-clause provi-

sions in wage contracts to the "new series" Consumers' Price Index, and that index has been rising. The mid-August index, which will determine the wage change, is due this week.

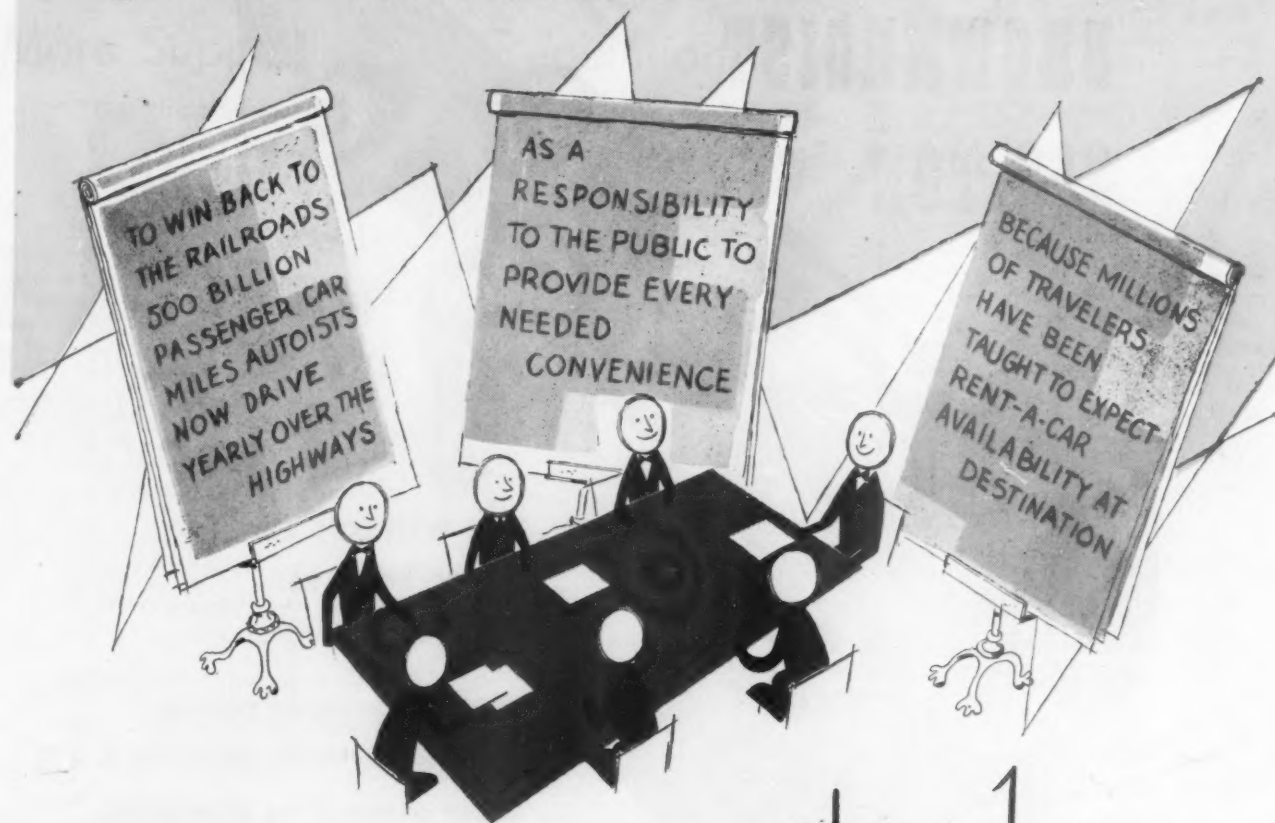
The Brotherhood of Railroad Trainmen will celebrate its 70th anniversary September 23, with ceremonies at the scene of its founding in Oneonta, N.Y. W. P. Kennedy, president of the union, and other officers, will participate.

A record-breaking 114.6 million tons of steel was poured by U. S. steelmaking furnaces in the past 12 months, the American Iron & Steel Institute has announced. That total, far above the greatest previous 12-month output in any country, and 2¾ times greater than Russia's expected output this year, includes 9,401,000 tons of ingots and steel for castings made in August, a production record for that month.

More diesels for the National of Mexico are in the offing. The NdeM's executive board has announced that steam locomotives will be replaced by diesels as rapidly as possible, with 50 per cent dieselization as a tentative goal. This, in turn, will require enlarged and additional repair facilities. First step in the new motive-power-buying program is reported in this week's Equipment news column.

One of the Western Maryland's big Shay locomotives—said to be the last of its type to be built and one of the last to be operated in the U. S.—has been donated to the B&O's transportation museum at Baltimore. One of the largest Shays ever constructed, the 4-4-4 locomotive was completed in 1945 for use on some of the WM's heavy-grade mine branches in West Virginia. It had tractive force of 59,760 lb. and a top speed of only 16 m.p.h., but could negotiate grades of 9.1 per cent and curves of 23½ deg.

Why alert rail management so aggressively promotes the HERTZ RAIL-AUTO PLAN



is your railroad doing its share?

What does it mean that at least 136 million miles were traveled on trains in 1952 by men and women who rented cars to drive at their destinations? Fifteen years ago there wasn't even 5% of that figure! Much of this developed during the past five years. Doesn't it mean just this: (1) That the Hertz-originated Rail-Auto Plan does work! (2) That Hertz' efforts launched on a grand scale in 1947, and the fine cooperation of most of the railroads in advertising and promoting the Rail-Auto Plan are paying off! (3) That in 1953 millions more men and women who now drive 500 million miles from city-to-city in their own cars... tiring, time-consuming, often hazardous miles... can be expected to change back to the trains because they can rent cars conveniently wherever they're going.

Are you doing your share to switch this traffic from highways to your railroad? Do you mention car rental availability in your own advertising, timetables and other literature? Do you encourage your ticket agents to profit with the 10% commission any Hertz station will pay them for car rental business, by asking every customer... "Shall I reserve a car for you at your destination?" If not, write us for convenient reservation forms, and worthwhile information. No obligation. Hertz, world's largest and finest rent-a-car organization, with more than 700 stations in over 500 cities through the United States, Canada, Alaska, Hawaii, Virgin Islands, Cuba, Haiti, Mexico, Great Britain, Ireland and Switzerland, will cooperate with you in every possible way.

NEW HERTZ LOCATION AT THE MILWAUKEE ROAD DEPOT IN MILWAUKEE

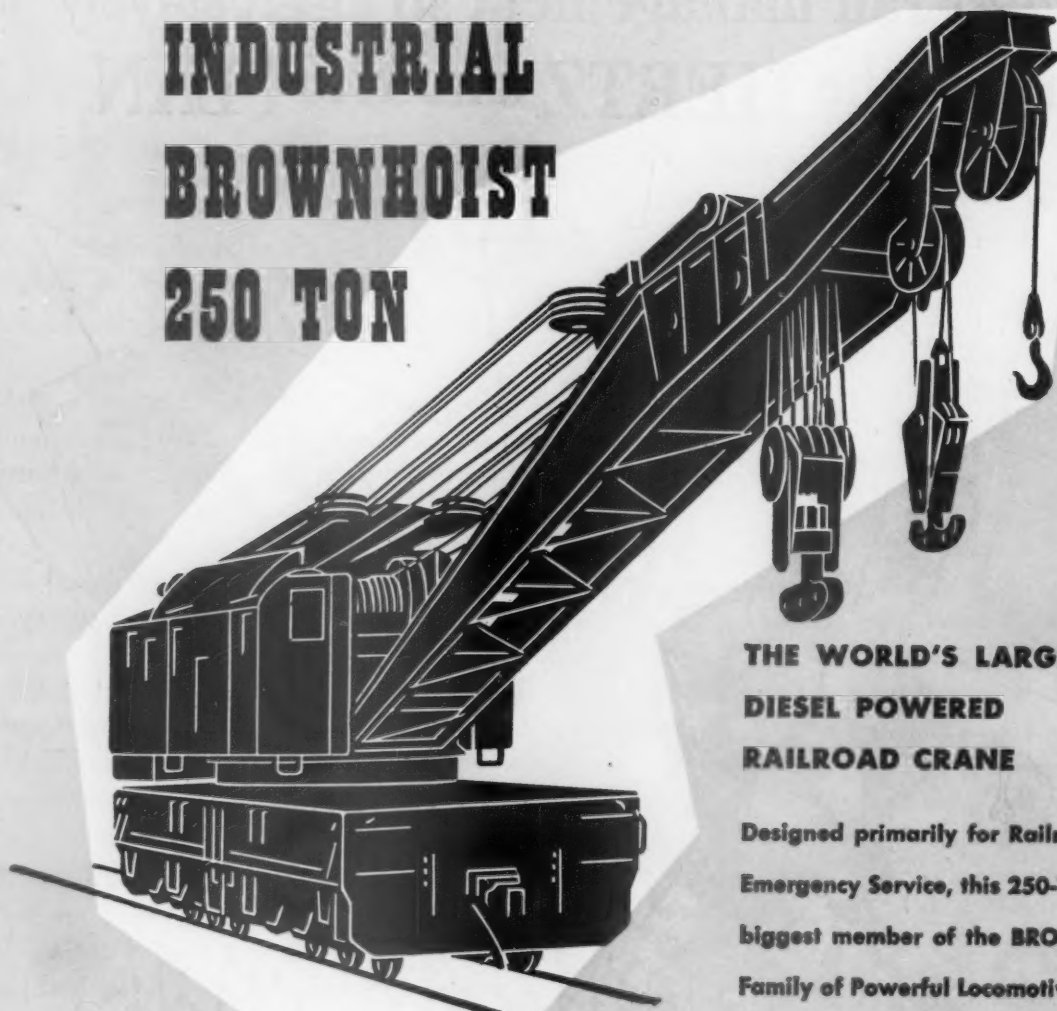
On August 17 Hertz installed a Rent-A-Car counter in the Milwaukee Road Depot to provide faster and more convenient service for passengers arriving in Milwaukee. Since the main Hertz station is only two and a half blocks from the depot, customers requesting cars at the depot counter will have their cars delivered to the depot by Hertz in less than five minutes. Hertz will provide this fast delivery 24 hours a day, 7 days a week. This is the kind of service that takes people from highway travel and switches them to the Rail-Auto Plan. From time to time Hertz will announce the opening of similar car rental counters in other railroad stations.



Dept. D93, 218 S. Wabash Avenue,
Chicago 4, Illinois; phone: WEBster 9-5165

HERTZ Rent-A-Car SYSTEM

INDUSTRIAL BROWNHOIST 250 TON



THE WORLD'S LARGEST DIESEL POWERED RAILROAD CRANE

Designed primarily for Railroad
Emergency Service, this 250-Ton Crane is the
biggest member of the BROWNHOIST
Family of Powerful Locomotive Cranes
For Heavy-Duty Materials-Handling
Work.

Brownhoist Diesel Locomotive Cranes are ruggedly
built for continuous, heavy-duty operation and for
long, dependable service. They perform equally
well as switch engine or crane and with magnet,
hook or bucket. Many advanced features of engi-
neering design and construction make BROWNHOIST
Cranes easy to operate and inexpensive to main-
tain. Standard models to meet every capacity
requirement. Write for complete information.



BROWNHOIST builds better cranes

CLAMSHELL BUCKET



COAL-ORE BRIDGE



CAR DUMPER



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158-A

More Support for De-Regulation

"But the transportation industry must not hide behind the skirts of government regulation to avoid improvement," speakers tell A.S.T.&T. conference

Two important men—each with a big impact on transportation's future—gave warm support to a program of de-regulation of transportation in addresses before the second "conference and seminar" of the American Society of Traffic and Transportation in Pittsburgh September 10 and 11. Their formal talks—one representing business, the other government—touched on ideas expressed at informal panel discussions which featured the conclave.

Clifford Hood, president of the United States Steel Corporation, made the theme of his dinner address that nationalization of the country's transportation systems is more likely to come about through oppressive government restrictions than from pressure of the demagogues of social planning. Robert R. Murray, undersecretary of commerce for transportation, U. S. Department of Commerce, assured the seminar at luncheon that the aim of the Republican Administration is to "get the federal government out of every activity in which it doesn't belong."

Creeping — "Nationalization could creep up via government regulation which is inequitable among the different forms of transportation, putting one or more of these forms at a competitive disadvantage to the point where they could no longer provide adequate service and thus creating public clamor for the government to take them over," declared Mr. Hood.

Restrictive regulations would deprive all or parts of the transportation industry of financial health and the fair competitive position needed for efficient operation and growth of service, he said, adding: "In other words, government itself, by over-regulation, by cumbersome regulation, by uneven regulation, could reduce the transportation industry's ability to earn a fair profit and to attract the capital necessary to growth and improvement."

He said the industry had done a good job in developing more efficient equipment "making possible modern industrial America." But he warned against using government regulations as a means of excuse. "The transportation industry, for its part, must not hide behind the skirts of government regulation in avoidance of its responsibility to move the American people and their products in a continuously more efficient way."

Although most of the British trans-

portation industry still is nationalized, Mr. Hood said, recent legislation now enables shippers and carriers to negotiate rates—providing set maximum rates are not exceeded. "Our American railroads, common carrier trucks and barge lines need some degree of this freedom from oppressive rate regulation," he declared.

Goals—In summary, Mr. Hood laid down a set of five "goals" for the "going, growing transportation industry that is so vital to the American economy and a frequently under-rated element of this nation's security:

- "Transportation must strive ceaselessly for improvement of both methods and mechanical equipment.

- "Transportation must avoid nationalization as it would a plague, and oppose public policies and regulations which might insidiously bring about state control.

- "Transportation must be assured of continuously good financial health.

- "Transportation must be available at all times and wherever needed.

- "Transportation must be available in as many of its numerous forms as possible, in order to be adequate to industry's needs, in order to preserve competition, and in order to safeguard the right of Americans to freedom of choice."

Critical Eye—Undersecretary Murray reported that the new Administration is re-examining every government policy and activity in the field of transportation with a critical eye. His own office has ended federal operations of barges—"the story is simple; we sold it."

It has scaled down the activities of the Civil Aeronautics Authority. Thus, it found a sizable staff with the

ROCK ISLAND OPENS 34 MILES OF BRAND-NEW MAIN LINE IN IOWA

Getting into the act, right up to the necks of its 7,000-odd citizens, the city of Atlantic, Iowa, put on a big show September 14 to help the Rock Island place in service its new "Atlantic Cut-Off," which comprises 34 miles of brand-new, heavy-duty main-line railroad, plus rights over almost 12 miles of existing Chicago Great Western trackage, on the Rock Island's route between Chicago, Omaha and Denver. The town played host to some 400 leaders of commerce and industry from Des Moines, Council Bluffs and Omaha, together with directors and officers of the railroad itself, most of whom were transported to the town in special trains.

Banners across Atlantic's main street proclaimed the date as "Farrington Day," to honor the railroad's president and upbuilder since the low point of depression bankruptcy; there was a contest for the town's inhabitants dressed in old-fashioned garb; schools were closed for the festivities; and the local paper, the News-Telegraph, put out an eight-page special edition devoted wholly to the Rock Island, its staff and the new cut-off. Included in the ceremonies was a noon-day picnic luncheon.

Climax of the show was the driving of a silver spike by President Farrington, at the switch, about one mile west

of Atlantic's depot, where the new cut-off takes off from the old line, almost straight across rolling hills to its connection with the CGW at McClelland and a new one-mile link between that trackage and the Rock Island's new Council Bluffs East yard. On one side of the spike-driving ceremony was drawn up old Engine No. 9, a ten-wheeler of the late seventies, a replica of the first "palace" dining car, and an early box car fixed up as a "zulu" outfit. On the other side was a modern streamlined special.

The new cut-off—described as the latest, and largest, single project in the road's 16-year program of "planned progress"—and that part of the CGW over which trackage rights have been secured (and which the Rock Island will dispatch) were placed in a new working timecard made effective at 12:01 a.m., September 14. Until eastbound Train No. 6 out of Omaha made the first revenue run over the new line the evening of that day, trains, exclusive of inspection specials, ran "extra" over the old line.

The new cut-off shortens the RI's route between the Mississippi and the Missouri rivers by more than 10 miles, and reduces speed and load-restricting grades and curves, as well as bridge maintenance. A descriptive feature article will appear in a future issue.

sole job of giving advice to airports; no member of the staff had ever run an airport. That office was abolished. Again, on several types of inspection work, the secretary now "designates" to qualified people in industry the jobs formerly handled by the C.A.A. For the time being, further federal aid to airports has been discontinued, pending study and review of proper policy in that regard.

Mr. Murray outlined several important issues which the Department of Commerce will pursue. Of one, federal aids to highways, he remarked: "In no other field does the role of the federal government need more examination than in the public roads program." The department will give complete review to the Merchant Marine Act and to building and operating subsidies; and must look into the controversy between the scheduled air lines and the so-called "non-skeds."

"The Shoe Will Pinch"—Respecting the department's aims for the railroads, the speaker promised it would "see that nothing can happen to that important segment of our transportation plant that will jeopardize the public interest."

In the field of regulation, the department has discontinued the practice of former administrations of appearing in most national cases, and no longer interests itself in individual cases at all. It will, however, become interested in the activities of regulatory bodies "which have broad and basic implications in the long run."

The undersecretary reported that the budget of the department relating to transportation is now \$813,000,000—compared with a level of \$1,068,000,000 in the department's presentation on January 1. He urged his audience not to take affright at parings for individual pet projects; "remember, when the shoe does pinch, it is all part of the program of getting the federal government back to its proper role—which we all want."

Tuggle Becomes Member Of I.C.C.'s Division 5

Kenneth H. Tuggle, newest member of the I.C.C., has been assigned to the commission's Division 5. The division handles motor carrier cases, and is

headed by Commissioner Cross. Mr. Tuggle will replace Commissioner Clarke as a member of the division.

Administrative supervision of the commission's Bureau of Water Carriers and Freight Forwarders has also been assigned to Commissioner Tuggle. Supervision of this bureau was formerly by Commissioner Johnson.

Rates & Fares

Western Lines Take to Family Fare Plan

Many western railroads have adopted the family fare plan for both coach and first-class travel. The plan is basically that which the Union Pacific began September 1 (*Railway Age*, August 24, page 12) for first-class travel only.

The plan calls for the head of a family to pay the full one-way fare (in each direction for a round trip). Then

the other parent and all children below the age of 22 pay one-half of that amount. Children under five, as always, travel free. Tickets are good on any train, although extra fare charges are collected (on a similarly reduced basis) where such charges are applicable to regular fare travel too. The only limitation is that the trip must begin on Monday, Tuesday or Wednesday of any week. A 300-lb. baggage allowance is made under this family plan and stopovers are permitted.

A large number of western roads have put this plan in effect for first-class travel on September 21 and will do so for coach travel October 19. The Canadian Pacific and Canadian National will place it in effect for both classes of travel on their western lines. The St. Louis-San Francisco will apply it on all lines west of Memphis and St. Louis. The Illinois Central will apply it only to travel between Chicago and St. Louis. The Wabash and the Gulf, Mobile & Ohio will apply it to overhead traffic only and not locally on their own lines.

These roads have adopted the plan

Deficits from Passenger Service and the Proportions of Freight

Class I Line-Haul Railways—Year 1952

	Per cent passenger service revenue of total revenues	Passenger service operating ratio	Passenger service deficit (thousands)	Per cent passenger service deficit of freight service net railway operating income
New England Region				
Can. Nat. Lines in New England	7.30	236.6	\$ 351	"
Can. Pac. Lines in Vermont	13.61	205.2	543	"
Maine Central	12.23	174.7	3,024	53.6
Rutland	17.47	170.2	883	114.4
Bangor & Aroostook	6.79	166.8	731	29.2
Can. Pac. Lines in Maine	15.00	149.5	739	119.8
Boston & Maine	23.14	145.3	12,195	70.7
Central Vermont	12.06	126.8	607	53.7
New York, New Haven & Hartford	41.10	100.2	12,524	54.1
New York Connecting	8.39	61.4	715	...
Great Lakes Region				
Pittsburgh & Lake Erie	3.70	231.7	2,473	19.0
New York, Susq. & Western	10.15	212.8	783	56.7
Grand Trunk Western	8.45	165.6	4,040	68.2
New York, Ontario & Western .....	.91	162.2	63	"
Erie	8.47	158.1	10,739	36.9
Delaware & Hudson	5.87	150.4	2,153	19.7
Lehigh Valley	7.58	145.1	4,009	26.8
New York, Chicago & St. Louis	2.34	140.0	2,282	9.1
Wabash	8.19	132.2	4,385	24.4
Delaware, Lackawanna & Western	16.74	120.6	4,997	31.5
New York Central	24.70	117.1	50,622	50.6
Ann Arbor .....	.67	105.3	8	1.0
Monongahela .....	.51	53.2	119	...
Central Eastern Region				
Bessemer & Lake Erie .....	.10	1,446.7	372	5.6
Missouri-Illinois .....	.37	475.4	90	9.3
Western Maryland .....	.34	435.5	961	10.0
Chicago & Illinois Midland .....	.50	362.2	102	18.5
Staten Island Rapid Transit	17.50	309.7	1,657	128.7
Illinois Terminal	8.63	212.3	1,450	68.5
Pennsylvania-Reading Seashore	24.66	206.2	3,566	...
Central of New Jersey	13.79	186.7	9,879	66.4
Baltimore & Ohio	9.16	173.2	35,647	44.6
Chicago, Indianapolis & Louisville	7.07	170.1	1,463	43.4
Reading	8.09	164.7	7,995	33.7
Pennsylvania	22.14	119.1	60,537	44.7
Chicago & Eastern Illinois	17.94	104.4	754	14.9
Long Island	72.35	96.4	4,956	168.2
Poconos Region				
Virginian .....	.33	520.7	694	7.6
Chesapeake & Ohio	4.37	177.7	14,356	20.1
Norfolk & Western	5.73	177.6	10,422	26.7
Richmond, Fredericksburg & Potomac	37.01	101.5	1,329	25.0
Southern Region				
Clinchfield .....	.17	554.4	216	2.3
Charleston & Western Carolina	1.54	253.2	172	17.6
Atlanta & St. Andrews Bay	2.26	248.9	138	19.3
Tennessee Central	3.44	229.0	281	36.2
Central of Georgia	11.99	162.1	4,036	51.3
Gulf, Mobile & Ohio	9.73	150.0	6,154	36.7
Atlanta & West Point	21.85	149.2	647	71.6
Georgia R. R.	9.09	147.1	502	23.2
Louisville & Nashville	11.68	143.2	15,557	36.0
Seaboard Air Line	15.17	128.6	9,214	28.6

INDEX TO VOLUME 134

The index to the latest volume of *Railway Age*, January to June 1953, is now ready for distribution, and copies may be obtained by those subscribers desiring them. Requests should be addressed to the Circulation Department, *Railway Age*, 30 Church street, New York 7. Subscribers who have in previous years made application for the index need not apply again.

for both local and interline travel: Santa Fe; Chicago & North Western; Burlington; Milwaukee; Chicago Great Western (no sleeping car service on own lines); Rock Island; Colorado & Southern; Fort Worth & Denver; Duluth, Winnipeg & Pacific (CNR); Great Northern; Kansas City Southern; Louisiana & Arkansas; Soo Line; Missouri-Kansas-Texas; Northern Pacific; Spokane, Portland & Seattle; and Union Pacific.

Division 3 Rejects Rate Cut on Montana Petroleum

A railroad proposal for lowering petroleum rates to meet a pipeline threat in Montana has been rejected by Division 3 of the Interstate Commerce Commission. The new rates already under suspension, were ordered cancelled.

The reduced rates were to apply generally between Billings and Laurel, Mont., and points in North and South Dakota, Minnesota and Wisconsin. The proposed pipeline would extend from Billings, Mont., to West Fargo, N. D.

To induce refiners not to make a commitment with the pipeline promoters the rail carriers agreed to establish a 26-cent rate from Billings, Mont., to Bismarck, N. D., and a 35-cent rate from Billings to West Fargo. Rates to other destinations would be constructed by combinations over Bismarck and West Fargo.

Present railroad rate between Billings and Bismarck is 63.5 cents and between Billings and West Fargo, 72.5 cents.

Protestants' Case—Protesting the rate reduction were oil refineries in Oklahoma and motor carriers, including the National Tank Truck Carriers. They contended the pipeline threat was not "real" and argued the proposed railroad rates would be unlawful.

The railroads—the Northern Pacific, Great Northern, Milwaukee, and Soo Line—contended the proposed rates would be "reasonably compensatory."

Division 3 found "considerable cogency" in the argument that the pipeline threat was nothing more than a threat. As to the proposed rail rates, the division was "seriously doubtful"

whether they would be compensatory.

"The record suggests that the respondents and their proponents are more immediately concerned with pipeline competition from the midcontinent field (Oklahoma) than with competition from the projected pipeline from the Billings-Laurel area," the division said.

Charges for pipeline-railroad movements of petroleum from Tulsa, Okla., "to a great many destinations in Minnesota and the eastern portions of North Dakota and South Dakota" are lower than all-rail rates from the Billings-Laurel area, the division added.

As to the reduced rail rates from Billings-Laurel, the division concluded that "the record before us is far from convincing that many of the proposed rates on the lower levels would be reasonably compensatory." It ordered the rates cancelled for this reason.

Operations

NYC Plans All-Expense Chicago-New York Tour

As an innovation in its passenger travel program, the New York Central is introducing an all-expense "long week-end" tour from Chicago to New York City that will include rail transportation, meals en route, hotel accommodations, a night club visit and sightseeing. S. W. Bone, passenger traffic manager at Chicago, said departure dates for three tours have been established September 24 and October 8 and 22, in response to public demand for a "packaged excursion." Transportation both ways will be on the Central's deluxe coach train, the "Pacemaker." The tour will include two nights at the Hotel Commodore in New York City.

Leaving Chicago on a Thursday at 3 p.m., excursionists will spend three full days and two nights in New York City, returning to Chicago on a Monday at 7:30 a.m.

The all-expense price of \$87 will include train fare, the 15 per cent federal transportation tax, dinner and breakfast on the train both ways, hotel accommodations, reserved seats both ways, an evening at the Latin Quarter

... Although details of Raymond Loewy's re-styling of the Northern Pacific's "North Coast Limited" have not yet been released, it has been reported that the exterior of the train will be given a new two-tone green livery and that the 20 new vista-dome coaches and sleeping cars now on order from the Budd Company for this train will carry this new color as well.

Service Net Railway Operating Incomes Which They Absorbed

	Per cent passenger service revenue of total revenues	Passenger service operating ratio	Passenger service deficit (thousands)	Per cent passenger service deficit of freight service net railway operating income
Southern Region (cont.)				
Atlantic Coast Line	18.71	128.5	11,681	48.8
Florida East Coast	30.37	127.1	3,814	49.2
Southern	13.46	126.6	13,367	26.9
New Orleans & Northeastern	10.57	126.2	813	31.1
Illinois Central	11.86	124.7	12,274	27.8
Western of Alabama	19.47	119.5	283	36.6
Georgia Southern & Florida	17.24	111.7	623	40.7
Alabama Great Southern	12.98	109.1	754	26.8
Nashville, Chattanooga & St. Louis	13.27	108.9	1,076	14.9
Cincinnati, New Orleans & Tex. Pac.	9.65	104.9	593	7.9
Northwestern Region				
Duluth, Missabe & Iron Range	.25	527.0	559	9.0
Duluth, Winnipeg & Pacific	1.55	421.9	378	65.2
Spokane International	1.40	364.9	109	18.0
Minneapolis, St. P. & S. S. Marie	6.98	266.9	5,506	74.2
Wisconsin Central	5.77	240.1	3,015	52.7
Duluth, South Shore & Atlantic	5.36	206.1	533	47.2
Chicago Great Western	3.74	178.9	1,730	31.9
Minneapolis & St. Louis	2.40	165.9	438	16.4
Northern Pacific	9.39	162.4	12,786	45.3
Great Northern	10.46	162.0	20,109	43.7
Chicago, St. P., Minneapolis & Omaha	13.54	157.9	3,672	91.8
Chicago & North Western	18.51	148.1	22,521	73.5
Spokane, Portland & Seattle	6.58	147.5	1,243	17.6
Chicago, Milwaukee, St. Paul & Pac.	13.72	144.7	21,566	55.3
Central Western Region				
Northern Western Pacific	2.96	247.9	709	98.1
Denver & Rio Grande Western	6.95	162.0	4,315	27.1
Union Pacific	13.84	148.4	41,717	55.6
Western Pacific	6.90	146.1	2,186	23.5
Southern Pacific	14.14	138.1	37,052	38.9
Chicago, Burlington & Quincy	14.41	127.7	16,378	34.0
Chicago, Rock Island & Pac.	16.06	127.1	13,185	34.2
Atchison, Topeka & Santa Fe	16.99	120.8	30,913	30.8
Fort Worth & Denver	14.70	113.7	969	22.3
Colorado & Southern	13.93	110.4	531	19.0
Southwestern Region				
San Antonio, Uvalde & Gulf	6.08	264.1	473	*
St. Louis Southwestern	2.07	207.2	1,920	12.4
Kansas, Oklahoma & Gulf	.68	204.5	71	4.9
St. Louis, Brownsville & Mexico	8.17	194.5	1,312	42.5
St. Louis, San Francisco & Texas	4.15	178.1	275	27.7
Beaumont, Sour Lake & Western	3.96	158.4	317	15.0
New Orleans, Texas & Mexico	6.59	154.7	399	12.1
Kansas City Southern	7.41	149.1	2,358	23.0
Missouri-Kansas-Texas	10.73	147.9	5,744	34.8
International-Great Northern	11.94	138.8	2,060	37.3
St. Louis-San Francisco	11.16	137.5	7,320	29.6
Texas & Pacific	12.44	132.0	4,091	23.5
Texas & New Orleans	9.84	131.3	6,642	32.8
Louisiana & Arkansas	4.99	128.6	450	8.5
Missouri Pacific	11.30	127.3	10,984	28.1

* Represents net profit.

* Deficits reported in both freight and passenger services.

—From the September 14, 1953, "Monthly Comment," issued by the Bureau of Transport Economics and Statistics, I.C.C.

night club in New York, a day of sightseeing, a tour of the United Nations building, all transfers, baggage handling and tips, and a pillow on the train.

It's Slow Grow for Motor Carriers Owned by Rails

Railroad controlled motor carriers of property showed little growth between 1948 and 1951, according to the Bureau of Transport Economics and Statistics, Interstate Commerce Commission.

An article in the bureau's publication, the "Monthly Comment," revealed these changes: Miles of regular route, up 4 per cent; vehicle-miles operated, up 8 per cent; intercity freight revenue, up 14 per cent, and ton-miles, up 3 per cent. There was a 1 per cent decrease in tons of freight carried.

Despite these increases, operations of railroad owned motor carriers of property in 1951 were a smaller part of the operations of Class I intercity motor carriers than they were in 1948.

During the 1948-1951 period, railroad controlled motor carriers of passengers were in a decline. Miles of regular route dropped 7 per cent; intercity passenger revenues fell off 17 per cent; vehicle-miles went down 17 per cent, and intercity revenue passengers dropped 30 per cent.

The "Monthly Comment" article was condensed from a longer study, "Motor Operations of Class I Railroads," released recently by the I.C.C. bureau.

New Trains, Faster Schedules on B&M

The Boston & Maine has announced that its new fall timetable, effective with the change to standard time September 27, will show 26 new trains and 44 trains running on faster schedules. Among the changes will be through "Highliner" (Budd rail diesel car) service between Boston, North

Conway, N.H., and Intervale, and between Boston and White River Junction, Vt., via Fitchburg, Mass., Keene, N.H., and Bellows Falls, Vt., giving the three latter cities a direct connection to Montreal.

The "Red Wing" will leave Boston

at 11:30 p.m., instead of 9 p.m. as at present, and cut its running time by one hour 50 minutes, arriving in Montreal at 9:10 a.m. Southbound, the "Red Wing" will leave Montreal at 8:30 p.m. and cut its time by 35 minutes, arriving in Boston at 6:45 a.m.

Labor & Wages

Retirement, Unemployment Rise

Railroad Retirement Board reports record fiscal year; benefit payments greatest in its history

Reporting the results of operation in its 1952-1953 fiscal year, the Railroad Retirement Board tells of the largest dollar volume of benefit payments in its history. Some 969,000 persons received a total of \$558 million in benefits under the Railroad Retirement and Railroad Unemployment Insurance Acts. The number of persons receiving these record benefits was second only to the peak number in the 1950-1951 fiscal year.

The high level to which the board's activities climbed in the recently concluded fiscal year was due, the board says, to:

- Completion of the first full year of operation under the new retirement and survivor provisions of the 1951 retirement act amendments;
- Upward adjustments made in some 92,000 survivor and 8,000 retirement benefits to which social security minimums applied (as the result of 1952 amendments to the social security act);
- Liberalization of unemployment and sickness benefit rates brought about by amendments to the Railroad Unemployment Insurance Act on July 1, 1952; and
- A substantial increase in the num-

ber of railroad workers unemployed at some time during the year.

Outgo—The biggest share of the year's payments went to 406,000 retired employees and their eligible wives—\$365 million. These figures are 8 per cent and 15 per cent over their counterparts for the year previous. Some 210,000 survivors—six per cent more than the year before—received \$95 million, a 26 per cent rise, dollar-wise.

Unemployment showed a 38 per cent rise—from 162,000 to 224,000—while payments soared 137 per cent—from \$22.7 million in 1951-1952 to \$53.8 million in the year just concluded. Sickness beneficiaries increased too, from 143,000 to 158,000, while payments to them jumped 68 per cent, from \$25.9 million to \$43.5 million.

Costs Lower—Running expenses of the board for administering both acts were less than for the previous year. Under the retirement act, 1.3 cents out of every dollar spent went for administration; under the unemployment insurance act this figure was 5.6 cents. Actual total administrative expense came to \$11.9 million, of which \$6.1 million went for administering the re-



LATEST OIL EXCITEMENT in the Williston basin is the discovery of a new oil field in southwestern North Dakota. The first producing well is right next to the Northern

Pacific's right-of-way—and the NP is watching the development with unusual interest in view of its own large land holdings in the area.

tirement act and \$5.8 million for the unemployment insurance act.

As of June 30, there was a total of \$3,147,000,000 in the retirement account, while the unemployment insurance account showed a balance of \$692,376,000. The former figure was an increase from \$2,869,000,000 at the end of the 1951-1952 fiscal year, but the unemployment insurance account dropped from a previous total of \$753,434,000.

People in the News

Clarke Says Transport Costs Affect Service

Many people have developed a "most unrealistic attitude" toward transportation rates and service by refusing to accept the theory that there is a direct relationship between cost and service. Interstate Commerce Commissioner Owen Clarke said in a September 15 speech in New York City.

Inadequate rates will lead to poor service, just as surely as night follows day, Mr. Clarke declared. He said economic conditions which affect the cost of production of other commodities also affect the cost of production of transportation service.

Sketching his "philosophy" of regulation, Mr. Clarke said regulation should "expect and require" management to provide the best possible service with the funds provided by the rate payer. He tempered this, however, with the remark that "regulation cannot expect limousine service on a wheelbarrow income."

The commissioner spoke before the New York chapter of I.C.C. practitioners. He commented, among other things, on what he considers "the right kind and the wrong kind" of government regulation in the field of transportation.

Pro-Private Enterprise—One of the primary responsibilities of sound

"MOTOR SERVICE, NOT TRAP CARS!" BOARD ASKS

The Ohio Valley Transportation Advisory Board, meeting at Louisville September 9-10, passed the following resolution which was proposed by Robert Tyler, chairman of the board's L.C.L. Committee and general traffic manager of Tube Turns, Incorporated, of Louisville.

"It is recommended that when trap car service is available to industries served by road-haul carriers, by terminal carriers or jointly by two or more carriers in a terminal area, motor service be substituted for the trap car service."

regulation, Mr. Clarke said, is to make sure that regulated industries "continue as private enterprise." He declared that those doing the regulating must abide by the "principle" that "best regulation is usually least regulation."

"We have many federal agencies, the commissioner said, "whose prime objective is to foster and preserve our great productive system of free and competitive enterprise. The I.C.C., I am happy to say, is dedicated to the principle that sound, sensible and equitable federal regulation of transportation industries, is the greatest bulwark we have against government ownership of these industries."

Turning to the "severe criticism" with which the I.C.C. is sometimes confronted, Commissioner Clarke said much of it stems from the alleged "unreasonable delays" in handling of commission cases. He said these delays are, in part, the result of an "almost superhuman workload" imposed upon the commission.

Mr. Clarke suggested that I.C.C. practitioners can help the commission "in many ways." These, he said, include the exercise of care in filing applications and complaints, prompt appearance at hearings, and exclusion of "repetition and irrelevant" matters at hearings and in briefs.

Overseas

British Railways Report Record Net

British Railways in 1952 realized their greatest annual net operating income since nationalization, according to a report of the British Transport Commission.

The railways last year had a record \$110,500,000 net operating income, \$12 million more than was recorded in 1951. Gross receipts reached \$1,129,200,000 while total operating expenses were \$1,018,700,000.

This income, the report states, was made despite a huge gap between increases in revenues and increases in expenses over pre-war levels, resulting primarily from recent rises in coal and steel prices and wages. British Railways fares and charges at the end of November 1952, averaged 111 per cent above those of pre-war, while wages and price levels rose 160 per cent.

General Operating Efficiency also increased during 1952. Net-ton-miles-per-total-freight-engine-hour were 605, compared with 595 in 1951 and 543 in 1948. Loaded-passenger-train-miles also increased, reaching 227,174,000, against 226,473,000 in 1951 and 220,195,000 in 1948.

Contrasted with pre-war figures, net-ton-miles-per-freight-engine-hour were 30 per cent greater than in 1938, while loaded-passenger-train-miles were up 28 per cent.

The British Railways report also showed 989 million passenger journeys, 284.9 million freight tons moved, an average of 91 passengers per train, and 74.8 per cent of trains either right on time or not more than five minutes late.

BRITISH RAILWAYS OPERATING RESULTS

	1952 (\$ Million)	1951 (\$ Million)
Gross Receipts		
Passenger services	313.3	299.6
Parcels and mails	100.8	92.7
Freight services	701.4	638.2
Miscellaneous	13.7	13.4
Total	1,129.2	1,043.9
Operating Expenses		
Train and vehicle operating costs	363.2	338.2
Maintenance & depreciation of rolling stock ..	210.3	193.2
Other traffic costs	252.6	234.6
Maintenance & renewal of way & structures ..	159.6	148.7
General expenses	33.0	30.8
Total	1,018.7	945.5
Net operating income	110.5	98.4

Competitive Transport

C.A.B. Would O.K. Air-Mail Experiment

The Civil Aeronautics Board has advised interested air lines that it proposes to establish the special rates which the Post Office Department wants in order to carry out its plan to get air service for three-cent, first-class mail now moving by rail between New York and Chicago and Washington and Chicago.

The plan, announced September 8 by Postmaster General Arthur E. Summerfield, contemplates that the mail involved will be carried by the air lines on a "space-available" basis at rates of 18.66 cents per ton-mile between New York and Chicago and 20.04 cents per ton-mile between Washington and Chicago (*Railway Age*, September 14, page 9).

C.A.B.'s proposal to approve these rates took the form of orders calling upon four air lines to show cause why the board should not fix such rates for the service which the Post Office Department seeks. The orders were served on American Airlines, Capital Airlines, Trans-World Airlines and United Air Lines.

Air Lines Are Willin'—American and United had already advised C.A.B. that they are willing to take the business at the rates proposed. Also two "non-scheduled" air-freight carriers have asked the board for authority to participate. They are the Flying Tiger Line and Slick Airways.

The C.A.B. announcement noted that movement of the mail involved would be subject to prior movement of all regular air mail, passengers and air express. It also stated that the board's proposal to fix the special rates contemplated that the authorization would

be for an experimental period ending September 30, 1954.

Aircoaches Would Cut Rate—Another development in the situation was a September 14 statement from H. B. Johnston, executive director of Aircoach Transport Association, who said the association's 40 member lines had advised C.A.B. that they were willing to move the mail involved at rates as low as 15½ cents per ton-mile. That would be a plane-load rate on the New York-Chicago route—provided the business supported round-trip operations for 25 days per month.

The comparable Washington-Chicago rate of the aircoach lines would be 17½ cents per ton-mile. They would take the business on both routes in less than plane-load lots for from 16 cents to 18 cents per ton-mile.

Truck Tonnage in 1953 Runs Above 1952 Level

Intercity truck tonnage transported by motor carriers in the second quarter of 1953 was 13.5 per cent greater than that carried in the same period last year, the American Trucking Associations reported. This showing is based on returns from 1,409 Class I carriers.

Using 1941 as a base of 100, the

second quarter index stood at 261, a new high for the period, A.T.A. said. It added that tonnage increases "were general throughout the country."

Murray Thinks It's Time To Cut Aids to Airlines

It appears that most of the domestic trunk-line air carriers "are eligible for membership in the fraternity of self-supporting transportation agencies," Robert B. Murray Jr., under secretary of commerce for transportation, said last week.

Speaking before the Wings Club at New York, Mr. Murray said federal aids which speeded air line growth "from infancy to maturity" should be withdrawn. He added that airmail subsidies "are only a part of the overall federal assistance to aviation."

"This has included," he said, "grants-in-aid for airport construction as well as the construction, maintenance, and operation of the federal airways system."

The under secretary's speech was a general review of the growth of aviation since passage of the Civil Aeronautics Act in 1938. His "brief examination" led to the "general conclusion" that an orderly withdrawal of federal aids is now possible.

Freight Car Loadings

Loadings of revenue freight in the week ended September 12, which included the Labor Day holiday, totaled 710,554 cars, the Association of American Railroads announced September 17. This was a decrease of 88,525 cars, or 11.1 per cent, compared with the previous week; a decrease of 170,737 cars, or 19.4 per cent, compared with the corresponding week last year; and a decrease of 140,258 cars, or 16.5 per cent, compared with the equivalent 1951 week. Neither the 1952 nor the 1951 weeks included Labor Day.

Loadings of revenue freight for the week ended September 5 totaled 799,079 cars; the summary for that week, compiled by the Car Service Division, A.A.R., follows:

REVENUE FREIGHT CAR LOADINGS			
For the week ended Saturday, September 5			
District	1953	1952	1951
Eastern	131,802	122,371	118,773
Allegheny	158,022	151,239	150,037
Pacahontas	59,501	54,438	55,564
Southern	123,246	111,374	110,138
Northwestern	142,748	135,128	131,436
Central Western	125,733	115,352	109,995
Southwestern	58,027	56,980	56,826
Total Western Districts	326,508	307,460	298,257
Total All Roads	799,079	746,882	732,769
Commodities:			
Grain and grain products	48,731	39,804	43,510
Livestock	8,039	10,413	11,375
Coal	136,903	136,769	131,681
Coke	12,257	13,548	15,582
Forest products	44,716	40,115	41,818
Ore	94,520	94,373	82,534
Merchandise i.c.l.	70,395	63,070	63,061
Miscellaneous	383,518	348,790	343,208
September 5	799,079	746,882	732,769
August 29	818,461	727,360	829,481
August 22	817,431	834,229	838,587
August 15	807,387	805,756	829,398
August 8	785,349	781,648	809,365
Cumulative total			
36 weeks	26,713,892	25,400,944	27,764,622

Figures of the Week

1953 Outlays Put at \$1 1/4 Billion

Latest estimates indicate expenditures for road facilities will be up 4.1 per cent from last year, but expenditures for equipment will be down

Class I line-haul railroads which have submitted estimates to the Interstate Commerce Commission expect their gross capital expenditures for the current year will total \$1,226,624,000. As compared with 1952, that would reflect an increase of 4.1 per cent in outlays for road facilities but a drop of 13.1 per cent in expenditures for new equipment.

This was shown in the latest "Monthly Comment" issued by the

commission's Bureau of Transport Economics and Statistics. The estimates are based on actual first-half expenditures made by 130 roads and third and fourth quarter estimates submitted by 126 of those roads. The four roads which did not submit estimates made expenditures totaling \$21.2 million in the year's first half.

Other comparisons are shown in the accompanying table, reproduced from the "Comment."

Actual and Estimated Gross Capital Expenditures

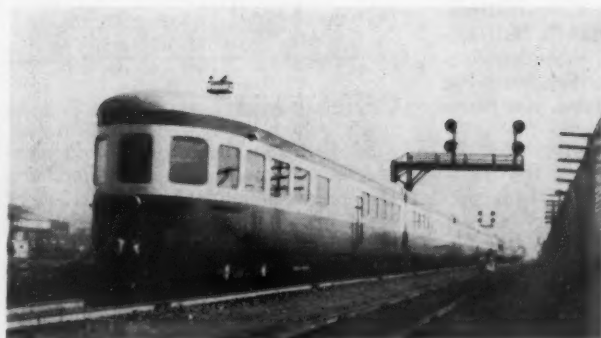
Class I steam railways				
Period	Number of roads	Road Thousands	Equipment Thousands	Total Thousands
Actual 1952:				
1st half	131	\$176,135	\$539,113	\$715,248
2nd half	131	222,052	396,006	618,058
Year	131	398,187	935,119	1,333,306
Actual 1953:				
1st half	130	180,175	464,509	644,684
Estimated 1953:				
3rd quarter	126	120,768	186,904	307,672
4th quarter	126	113,457	160,811	274,268
2nd half	126	234,225	347,715	581,940
Total: 1953 actual and estimated		414,400	812,224	1,226,624
Per cent of change:				
1st half 1953 vs. 1st half 1952		+2.3	-13.8	-9.9
2nd half 1953 (Est.) vs. 2nd half 1952		+5.5	-12.2	-5.8
Year 1953 (actual and estimated) vs. 1952		+4.1	-13.1	-8.0

Organizations

Nickel Plate Chief To Address Safety Group

"The First Rule in the Book" will be the subject discussed by L. L. White, chairman and president of the New York, Chicago & St. Louis, before the Railroad Section of the National Safety Council during the National Safety Congress to be held in Chicago the week of October 19.

Mr. White will speak to the Railroad Section October 21—which the safety council and the congress will observe as "Transportation Day." Other speakers to appear before the section (which will meet at the Morrison Hotel the afternoons of October 20, 21 and 22) include: Dr. Allen A. Stockdale, National Association of Manufacturers; J. A. De Luca, Jr., safety superintendent, construction division, E. I. du Pont de Nemours & Co.; and J. W. Kunkler, signal supervisor, Baltimore & Ohio, Western region. All sessions will be presided over by the section's general



THE "AZTEC EAGLE," new National of Mexico stream-lined train which began operations between Mexico City and Laredo on August 7. The lightweight cars were built



in Switzerland, but many component parts were furnished by American manufacturers. (See also *Railway Age*, August 31, page 5.)

chairman, R. C. Sabens, superintendent of safety for the Nickel Plate. An open forum discussion of general safety problems will occupy the final session October 22.

Safety Council Gets A Federal Charter

The National Safety Council has joined the American Red Cross, the Girl Scouts, the Boy Scouts and a limited group of other public service organizations which are incorporated under a federal charter.

Action recently taken by Congress and by President Eisenhower granting the N.S.C. such a charter is regarded as formal recognition by the government of the council's 40 years of work in combating accidents as a privately financed non-profit organization.

No Change—Ned H. Dearborn, president of the council, has stated that the new charter does not portend any important changes in its structure, purposes or activities. It will continue as a privately operated and financed membership association. No government funds will be appropriated and there will be no changes in membership service or dues arrangements. Legally, it will involve only a transfer of the council's assets as an Illinois corporation to the newly organized federal corporation.

"The charter means that Congress has examined our efforts and found them good. But it has even more significance, because it opens wider doors to the future and it inspires us to work harder than ever to influence the public attitude toward safer living," Mr. Dearborn said.

Formal presentation of the charter will take place during the National Safety Congress to be held in Chicago the week of October 19.

William Wyer, trustee of the Long Island, will speak at the September 25 meeting of **Railroad Enthusiasts, New York Division**, at the Y.M.C.A. Auditorium, Pennsylvania Station, New York, at 8 p.m. His subject will be "Problems of Running the Country's Biggest Commuter Railroad."

The new railroad panel of the National Cooperative Project of the **Transportation Association of America**, is composed of the following members:

J. Carter Fort (chairman), vice-president and general counsel, Association of American Railroads; Sidney S. Alderman, vice-president and general counsel, Southern; E. H. Burgess, vice-president and general counsel, Baltimore & Ohio; J. C. Gibson, vice-president and general counsel, Santa Fe; W. L. Grubbs, vice-president and general counsel, Louisville &

Nashville; James L. Homire, vice-president and general counsel, Frisco; John B. Prizer, general counsel, Pennsylvania; W. R. Rouse, western general counsel, Union Pacific; Jervis Langdon, Jr., chairman, Association of Southeastern Railroads; D. P. Loomis, chairman, Association of Western Railways; David I. Mackie, chairman, Eastern Railroad Presidents Conference; Eldon Martin, general counsel, Burlington; H. H. McLean, general counsel, New York Central; Stuart T. Saunders, general counsel, Norfolk & Western; William H. Swiggart, vice-president and general counsel, Nashville, Chattanooga & St. Louis; and D. S. Wright, general counsel, Gulf, Mobile & Ohio.

"Transportation—The Key to Economic Freedom" will be the subject of an address by Donald D. Conn, executive vice-president of the Transportation Association of America, at a luncheon sponsored by the **Traffic Club of New York** and the **Atlantic States Shippers Advisory Board**, in connection with the 91st regular meeting of the latter. The luncheon will be held in the Grand Ball Room of the Hotel Commodore, New York, at 12:30 p.m., September 24.



"HAVE A CIGAR on our new baby 'Lowell'." A real cigar, with its wrapper thus engraved, accompanied this Monon four-page booklet to announce the August 17 opening of a new passenger station at Lowell, Ind. The cigars and booklets were mailed to an extensive list of traffic clubs, shippers, newspapers, and business and fraternal publications. In addition to picturing the new Lowell station, the booklet shows the station at Monon, Ind., opened earlier this year (*Railway Age*, June 29), and announces the forthcoming "Hammond twins"—new freight and passenger stations at Hammond, Ind., to be opened later this year.

Equipment & Supplies

LOCOMOTIVES

Only 2-1/3% of Diesels Are Over 13 Years Old

Class I line-haul railroads had 20,492 diesel-electric locomotive units in service as of December 31, 1952, and all but 487 (2.37 per cent) of them were built since 1939. Nearly half—9,639, or 47.05 per cent—were less than four years old, having been built in the 1950-1952 period.

These and like data on steam and other types of locomotives were presented by the Interstate Commerce Commission's Bureau of Transport Economics and Statistics in its latest "Monthly Comment."

The figures also showed that steam locomotives in service as of the close

of last year totaled 16,078, of which only 49, or 0.31 per cent, were built in the 1950-1952 period. More than half of them—8,447, or 52.54 per cent—were more than 22 years old, having been built prior to 1930.

Electric locomotives in service at the end of last year totaled 756. Less than three per cent of them were built in the 1950-1952 period, and more than 77 per cent of them were built prior to 1940.

The **National of Mexico** has ordered 20 1,600-hp. diesel units from the Baldwin-Lima-Hamilton Corporation.

FREIGHT CARS

The **Baltimore & Ohio** has ordered 12 cabooses from its own shops at an estimated cost of \$7,000 each. Deliveries are to be completed by next January 1.

The **New York Central** has ordered 25 50-ton box cars from the Pullman-Standard Car Manufacturing Company at a cost of \$190,000. Delivery is scheduled for the first quarter of 1954.

The **Western Pacific** has ordered 10 cushion underframe 50-ton box cars from the Pullman-Standard Car Manufacturing Company at a cost of \$75,000. Authorization by the road's board to purchase these cars was reported in *Railway Age*, August 10, page 15.

Supply Trade

Farr Company, Los Angeles, has established a southern division sales office in the Sterick building, Memphis, in charge of **Donald Harworth**, southern division sales manager.

Mosebach Electric & Supply Co., Pittsburgh, has been merged with **Al-**

legheny Warehouse Corporation, of McKees Rocks, Pa. **Ralph M. Nadler** has been appointed executive vice-president of Mosebach, the surviving firm, and **Harold J. Evans**, vice-president in charge of operations.

J. C. Frink, manager of the transportation, marine and aviation department for the eastern district of the **Westinghouse Electric Corporation**, will head that activity for the recently consolidated northeastern region, which embraces territory formerly included in eastern and New England districts.

Graybar Electric Company has opened a branch in San Bernardino, Cal., with **J. H. Gregerson** as manager and **R. P. Sager** as operating manager. **J. M. Ferguson** has been appointed manager and **R. J. Nelson** operating manager of the Davenport, Iowa, branch. The following have been appointed operating managers: **E. L. Harrelson**, Shreveport, La.; **H. L. Warman**, El Paso, Tex.; **H. J. Couch**, Oklahoma City, Okla.; **J. P. Flowers**, Allentown, Pa.; **N. F. Clark**, Buffalo, N.Y.; **A. C. Goodwin**, Syracuse; and **E. J. Grady, Jr.**, West Hartford, Conn.

Spring Packing Corporation, Chicago, has opened a new eastern regional office in the Suburban Station building, 1617 Pennsylvania boulevard, Philadelphia.

Barber-Greene Company, Aurora, Ill., has opened a new factory and office near Toronto, which is being operated by **Barber-Greene Canada, Ltd.**, a subsidiary.

Frank G. Hough Company, Libertyville, Ill., has appointed **Jack C. Bever** sales representative for a district comprising several southeastern states, and **Dwain Richey** as sales representative in the southwestern district.

New Facilities

Office Buildings Make News

Because the city of Omaha is planning a centennial celebration, the Union Pacific has announced that its 12-story office headquarters building at 15th and Dodge streets will be given a complete exterior renovation, at a cost of \$119,000. At the same time, the Western Pacific has announced "immediate" construction of an additional floor on its headquarters building at 526 Mission street, San Francisco.

The new floor will give the WP building seven full stories plus an eighth floor lunchroom, and will add 11,200 sq. ft. of office space to that which the building presently offers. Construction will match that of the present portion of the building, which is of reinforced concrete. This \$200,000 project will not enable the WP to house all its general offices under one roof, however. The company will continue to occupy the adjoining five-story building at 516 Mission Street.

Renovation of the exterior of the UP building calls for steam cleaning, sandblasting and hand washing of the brick, stone and terra cotta surfaces. This will be followed by weatherproofing, tuck pointing of mortar joints and scraping and refinishing of all painted surfaces.

Chicago, Rock Island & Pacific.—Bridges over 26th and 29th streets in Chicago are being repaired and converted to ballast deck by the F. K. Ketter Company (\$44,066). One of the final jobs on Atlantic (Iowa) cutoff—construction of two concrete abutments on steel piles and encasing of two piers—is being undertaken by the Iowa Bridge Company (\$38,975).

Louisville & Nashville.—A 5,573-
(Continued on page 112)



THOMAS E. AKERS (left) has been elected chairman of the Dominion Brake Shoe Company, a subsidiary of American Brake Shoe Company. He was formerly president of the Cana-



dian company and has succeeded Maurice N. Trainer, who continues as president of the parent company. **KENNETH T. FAWCETT** (center), vice-president of the Canadian com-



pany, has been elected president, and has been succeeded by **MAYNARD B. TERRY** (right), who also holds the presidency of the American Brake-blok division.

"Let's Take The Train"

How a Kansas City department store tied in displays with Santa Fe to promote rail travel and California fashions

The Santa Fe brings California to Macy's" was the theme of a large promotional effort undertaken recently in Kansas City by Macy's department store and the Atchison, Topeka & Santa Fe. It is reported to have been one of the biggest cooperative promotional efforts yet undertaken in the retail merchandising field.

The original idea came from Macy's, and took nearly six months of planning to bring to fruition. As the project grew, the Santa Fe joined hands in handling the many



details of preparation. Living orange trees, palm trees, and cactus plants were liberally sprinkled throughout the store, together with orange, walnut and raisin exhibits, displays of prize-winning California photography, and props from the Goldwyn movie "Hans Christian Andersen."

Easily the outstanding feature of the effort were the store windows which were made up to represent a train—each window being a different car in the train.



EACH of Macy's "travel by train" windows features a different aspect of train travel. . . .



enjoying the view in a pleasure dome car. . . .



dining. . . .



and comfort in a Pullman sleeper.



THESE

PARTS FROM OUR POOL

WILL SAVE

YOUR RAILROAD

PLENTY

You can exchange worn units for all of these major components and sub-assemblies rebuilt by Electro-Motive and available from our Factory Branches on Unit Exchange:*

**D27 Traction Motor complete—or
Armature only
Stator Assembly
Commutator
Field Coils**

**567 Engine complete—6-, 8-, 12- or 16-cylinder—or
Governor
Injector
Crankcase Assembly
Blower**

Main Generator with Alternator Assembly—D8B, D12-D14, D15-D16

Main Generator—D4D, D8, D15

Main Generator Armature only—for all of above models

Auxiliary Generators—10 kw or 18 kw

**A.C. Accessory Equipment:
I-666 Cooling Fan and Motor
I-666R Cooling Fan and Motor
I-777 Cooling Fan and Motor
I-442 Cooling Fan Motor
I-435 Traction Motor Blower Motor**

**Consult Electro-Motive Factory Rebuild Catalog for Unit Exchange Part Numbers*

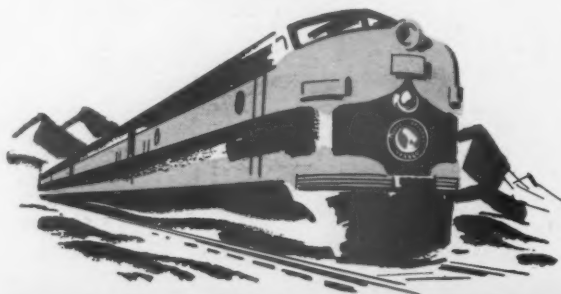
All Electro-Motive rebuilds incorporate latest engineering improvements. All carry the same warranty as new components. If your line has any General Motors Diesel locomotives in service, you can save money with Unit Exchange. Write, wire or phone for full information.



**ELECTRO-MOTIVE DIVISION
GENERAL MOTORS**

La Grange, Illinois • Home of the Diesel Locomotive
In Canada: GENERAL MOTORS DIESEL, LTD.
London, Ontario

**GENERAL MOTORS
LOCO MOTIVES**

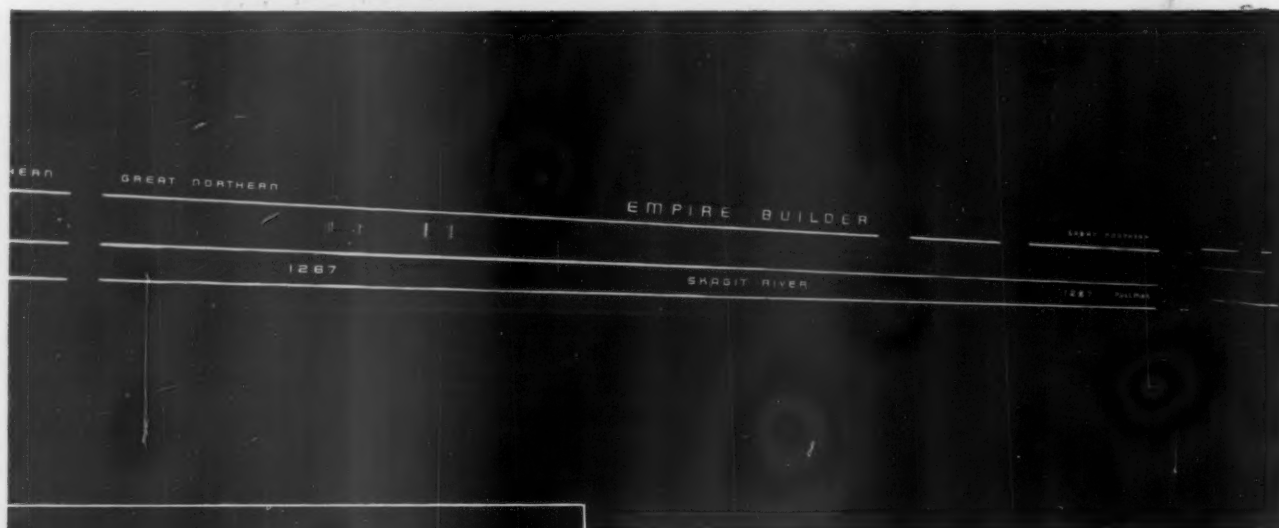


GN reflectorizes rolling stock with REG. U. S. PAT. OFF. **SCOTCHLITE**

BRAND

REFLECTIVE SHEETING

BRILLIANT NIGHTTIME VISIBILITY — under *all* conditions — for the Mid-Century Empire Builder is now provided by reflective striping, names and numbers. For this dramatic job, the Great Northern Railroad selected "Scotchlite" Flat-Top Sheeting—the smooth-surfaced reflective material that lights up at night in true color, true size, true shape. Easy to apply. Long lasting. Easy to maintain. "Scotchlite" Sheeting is an important, time-saving asset for the paint shops, with significant safety and public relations values. For more information on railroad reflectorization, return the coupon below. No obligation, of course.



Minnesota Mining & Mfg. Co.
 Dept. RA 93
 St. Paul 6, Minnesota

Please send me additional facts on
 railroad reflectorization programs.

NAME.....

COMPANY.....

ADDRESS.....

CITY.....ZONE...STATE.....



Made in U.S.A. by Minnesota Mining & Mfg. Co., St. Paul 6, Minn.—also makers of "Scotch" Brand Pressure-Sensitive Tapes, "Scotch" Sound Recording Tape, "Underseal" Rubberized Coating, "Safety-Walk" Non-slip Surfacing, "3M" Abrasives, "3M" Adhesives. General Export: 122 E. 42nd St., New York 17, N. Y. In Canada: London, Ont., Can.



2-WAY RADIO

NOW AVAILABLE AS STANDARD EQUIPMENT

Now you can order your engines factory equipped with 2-way railroad radio . . . by arrangement with locomotive manufacturers and Bendix* Radio.

Our engineers are familiar with locomotive manufacturers' problems and production methods. Thus these manufacturers turn to Bendix for assistance when radio installations are specified.

SAVE TIME . . . MONEY

When you specify factory installation of 2-way equipment, you eliminate delays in placing the engine in service.

Railroad personnel need not be assigned to make secondary radio installations.

Complete detailed engineering drawings are prepared by the locomotive manufacturers.

Because conduit and mounting facilities can be incorporated during the assembling of the locomotive, standard equipment installations are generally less expensive than when the locomotive is tied up on railroad property for radio installations.

AVAILABLE 2 WAYS

If you prefer the power supply, transmitter and receiver all in one package, ask for further information on the Bendix MRT-6.

If you prefer power supply, transmitter and receiver on a single base, but in separate cases, ask about the Bendix MRT-8.

Both are easy to service . . . easily removed.

Standard equipment of Bendix Radio now adds another step forward to modern railroading.

Write for further information about Bendix MRT-6 and MRT-8 equipment and Bendix CRC . . . Bendix Centralized Radio Control.

BENDIX* RADIO

BALTIMORE 4, MARYLAND

A DIVISION OF BENDIX AVIATION CORPORATION

EXPORT SALES: Bendix International Division

205 E. 42nd St., New York 17, N.Y., U. S. A.

* Reg. U. S. Pat. Off.



Bendix THE MOST TRUSTED NAME IN *Radio*

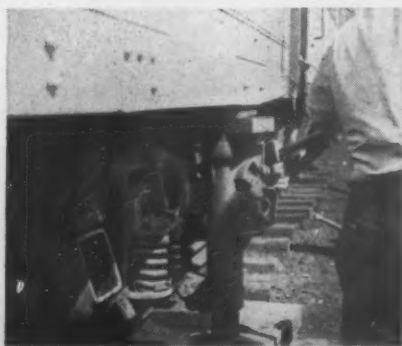


"ASF 1940" 50-ton test car, shown at Hammonton, N. J., where the short-travel coil springs were replaced with Ride-Control Packages for the return trip to Atlantic City.

Another test car in the train—identical with this car—was mounted on ASF Ride-Control Trucks. Both

test cars contained specially designed accelerometers for measuring impacts.

An "operations car," with impact-recording instruments, and two passenger cars were located in such a way as to isolate the two test cars from each other and from undesirable influences of the locomotive.



**Eliminating a major cause
of lading damage—
in 12 minutes or less!**

◀ Jack up the car—remove old
AAR coil springs . . .
and slip in the self-contained
Ride-Control Package. ▶

Car now has the smooth-riding
qualities that are possible with
long spring travel . . . controlled
by constant friction.



You reduce lading damage claims when you
reduce the lading damage index... and the
Atlantic City test runs prove how

ASF Ride-Control Packages cut lading damage index 90% or more!

The ASF Test Train, on its Atlantic City runs, proved conclusively that railroads no longer have to put up with the costly use of hard-riding freight cars.

We're referring, of course, to cars built before ASF Ride-Control® Trucks were first introduced in 1944; cars good for further service, except for the old 1936 short-travel springs that pound the day-lights out of the lading, the roadbed and the car itself.

On a typical test run, the "ASF 1940" test car was mounted on short-travel springs for a 28-mile run. Maximum speed was 56 mph. For the return trip, the car ran on ASF Ride-Control Packages—at speeds up to 84 mph. Here are the actual test results... comparing the riding qualities of the same car carrying the same

load on the same track... with just one quick change in the springing;

**Impact Count—car outbound with
short-travel coil springs**

10,908	.25G	4894 x 1	—	4,894
6,014	.50G	3631 x 4	—	14,524
2,383	.75G	1667 x 9	—	15,003
716	1.00G	716 x 16	—	11,456
Lading Damage Index —				45,877

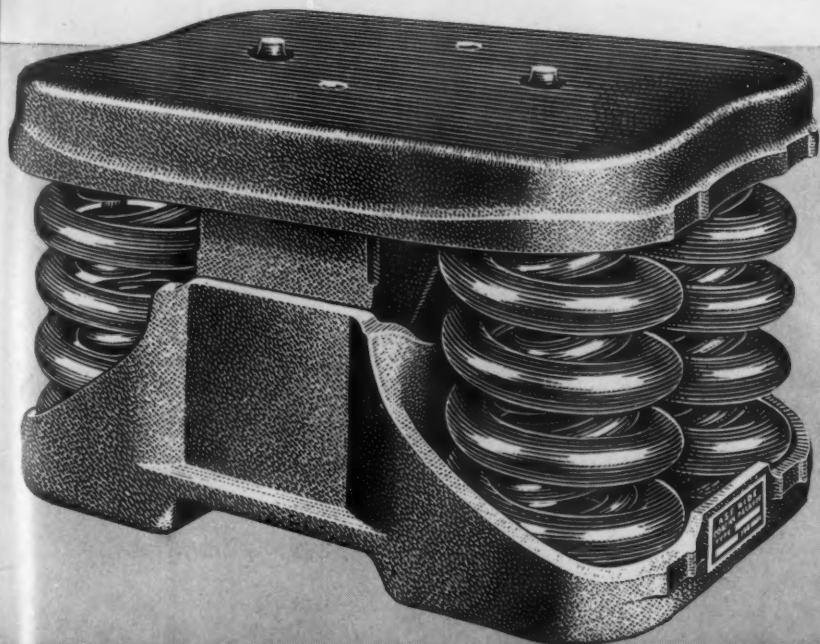
**Impact Count—car inbound with
ASF Ride-Control Packages**

2,699	.25G	2590 x 1	—	2,590
109	.50G	100 x 4	—	400
9	.75G	7 x 9	—	63
2	1.00G	2 x 16	—	32
Lading Damage Index —				3,085

In short, lading damage index reduced 93%—even though the Package-equipped car was run at 84 mph. Eliminate the harmless .25G impacts, and the reduction is almost 100%... another way of saying that there's hardly any comparison between the "before and after" riding qualities of the same car!

Prove it on your line... specify Ride-Control Packages for your older cars. Watch claims and car maintenance costs go down, while the number of cars available for unrestricted use goes up! Your ASF Representative can give you complete facts.

Bring your old freight cars up to modern riding standards... with the



ASF
**RIDE-CONTROL
PACKAGE**

AMERICAN STEEL FOUNDRIES

410 N. Michigan Avenue, Chicago 11, Illinois

Look for this MINT  MARK on the running gear you specify

Canadian Sales: International Equipment Co., Ltd., Montreal 1, Quebec

Dearborn's WORKING

Dearborn service representative collecting test quantity of soil with sampling paper.



Dearborn cleaners for railroads are "job designed" to eliminate corrosion and prevent damage to paint.

Before recommendations for a complete Dearborn cleaning program are submitted, on-the-spot soil samples are laboratory tested to determine what type and amount of deposits are to be removed. Paint panel tests are made to determine compatibility of painted surface to various types of cleaners.

Careful analysis indicates the proper Dearborn cleaner to do the job at low unit cost—in reduced "out-of-service" time—and with safety to equipment and men.

Dearborn cleaners are used extensively by leading railroads because they "Clean with Safety."

1 2 3 4 5 6

TO: Dearborn Laboratories From: _____

SOIL SAMPLES FOR FILM STUDIES

Collected _____ 19____ Company _____

Location _____

Type of equipment, or source of sample _____

Surface Temperature (Approx.) _____

Analyses desired: (circled) Ca Mg Fe₂O₃ Al₂O₃ SO₂ SO₃ Carbon _____

Oil Other _____

DEARBORN CHEMICAL COMPANY (over)

Dearborn

TRADE MARK

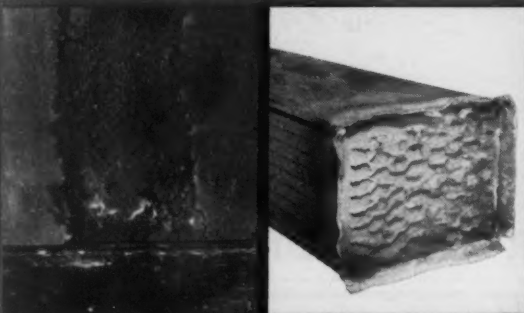
DEARBORN CHEMICAL COMPANY · Merchandise Mart Plaza, Chicago 54, Illinois

COMBATting CORROSION
EVERYWHERE SINCE 1887

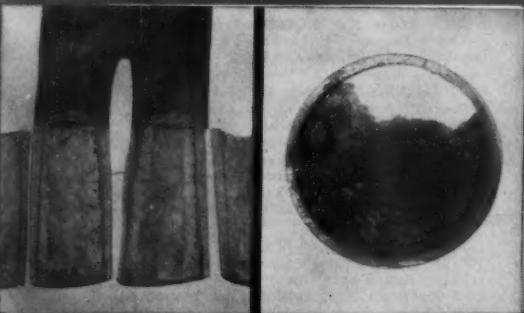
ON THE RAILROAD



KEEPS CAR JOURNALS READY FOR USE



PREVENTS CORROSION IN COOLING SYSTEMS



ELIMINATE SCALE—AVOID SHUTDOWNS

WRITE FOR INFORMATION

A series of bulletins on Dearborn cleaners, rust preventives, cooling water treatment and scale removal, is available to you.

USE THE COUPON

Dearborn NO-OX-ID "400"

Here's the protection you've wanted for car journals. Dearborn's NO-OX-ID "400"—the easy-to-apply, wax-type film—will not run, sag or alligator in hot weather...will not crack even at 60° below zero. Removed quickly by solvents or steam.

Dearborn FORMULA 527

Dearborn's FORMULA 527...is the new Non-Chromate Cooling Water Treatment that prevents corrosion on all cooling system metal parts—including aluminum. Does not irritate the skin; safe to use with antifreeze solutions.

FORMULA 527 TEST KIT. Water treated with Formula 527 may be tested with Dearborn 527 colorimetric Test Kit or Dearborn Concentrometer and Solu-Bridges.



Dearborn FORMULA 134

Wherever water travels, scale tends to form. Dearborn Formula 134, a concentrated solvent, safely removes the scale in heat exchange units, boilers, pumps, feed lines, meters, condensers and other valuable equipment—reduces shutdown time and maintenance costs.

Dearborn Chemical Company Dept. RA
Merchandise Mart Plaza—Chicago 54, Illinois

Please send me

- ☐ Bulletin No. 6000 on railroad cleaners
- ☐ Information on NO-OX-ID "400"
- ☐ Bulletin No. 5014 on Formula 527
- ☐ Bulletin No. 5002 on Formula 134
- ☐ Have a Dearborn Engineer call

Name.....
Railroad.....
Position.....
Address.....
City.....Zone.....State.....

NO MATTER WHAT YOUR SHIPPING PICTURE IS—



Streamlite HAIRINSUL PROTECTS PERISHABLES UNDER ALL CONDITIONS

Shipments of valuable perishables are at the mercy of extreme temperature changes unless properly protected. Only an efficient refrigerator car insulation can reduce this hazard.

Leading refrigerator car builders recognize this. That is why, for the better part of a century, they have been specifying all-hair insulation. They know that Streamlite Hairinsul is the one insulation that is fully efficient under all conditions—no matter how severe.

Other reasons why car builders specify Streamlite Hairinsul are listed at the right. These are just a few—there are more. Write for complete data.

LOW CONDUCTIVITY. Thoroughly washed and sterilized, all-hair heat barrier. Rated conductivity — .25 btu per square foot, per hour, per degree F., per inch thick.

LIGHT WEIGHT. Advanced processing methods reduce weight of STREAMLITE HAIRINSUL by 40%.

PERMANENT. Does not disintegrate when wet, resists absorption. Will not shake down, is fire-resistant and odorless.

EASY TO INSTALL. Blankets may be applied to car wall in one piece, from sill to plate and from one side door to the other. Self-supporting in wall sections between fasteners.

COMPLETE RANGE. STREAMLITE HAIRINSUL is available ½" to 4" thick, up to 127" wide. Stitched on 5" or 10" centers between two layers of reinforced asphalt laminated paper. Other weights and facings are available.

HIGH SALVAGE VALUE. The all-hair content does not deteriorate with age; therefore has high salvage value. No other type of insulation offers a comparable saving.



Sets The Standard By Which All Other Refrigerator Car Insulations Are Judged



AMERICAN HAIR & FELT CO.

Dept. 1157, Merchandise Mart, Chicago 34, Ill.

New Plug-In "45A"



*Cuts Carrier Cost Lower
than ever before possible!*

TECHNICAL INFORMATION on Type 45A

CO-ORDINATES—Can be used above any 35 kc carrier; will co-ordinate with other systems in 40-150 kc range.

SAVES SPACE—Two complete 12-channel terminals including line filters, power supply, and other auxiliary equipment mount on single 11'6" rack.

SERVES DEPENDABLY—Circuit levels controlled within one db—even under ice conditions.

INSURES STABILITY—Frequency range is 40-150 kc; drift is less than one cycle.

SAVES MONEY—With simple changes, channel units ("plug-in" packages 10½" x 3¼" x 6¾") can be used for any channel—fewer replacement units need be stocked.

Lenkurt Type 45A Wire Line Carrier Telephone System costs less to buy—less to maintain.

Components are miniaturized, standardized, "plug-in" units; complete channel assembly plugs into small space as shown above. You can order equipment to fit your needs *exactly* and add channels one at a time, as your needs increase. Maintenance is simple—takes little time, costs little because any of the "plug-in" components can be quickly and easily replaced. And Type 45A saves more than 80% on floor space; two 12-channel terminals with common equipment can be mounted on one standard rack!

Lenkurt's new Type 45A Carrier will "prove in" where carrier could not be used economically before. Even if you have never used carrier, it will pay you to get the facts on Type 45A. Write us today!

Manufactured by





Six bucks to repair a six-buck item?

Too much? Maybe so, but it's happening all the time. At today's maintenance rates of \$3 to \$4 an hour, regrounding a valve seat isn't a small job any more. Nor is repacking a valve, or installing a new one. Even replacing an ordinary pipe fitting isn't the same job it used to be.

You see, piping maintenance labor has gone up along with all other costs. That's why any excessive maintenance can quickly equal or exceed equipment cost.

You'll meet this problem best by insisting on the most dependable quality in piping materials. By having greater assurance they will stay on the job longer, need fewer repairs, cause less trouble. By standardizing on Crane Quality—the choice of thrifty buyers in every industry.

Crane Co., General Offices: 836 S. Michigan Ave., Chicago 5, Ill. Branches and Wholesalers Serving All Industrial Areas.

CRANE

VALVES • FITTINGS • PIPE • PLUMBING • HEATING

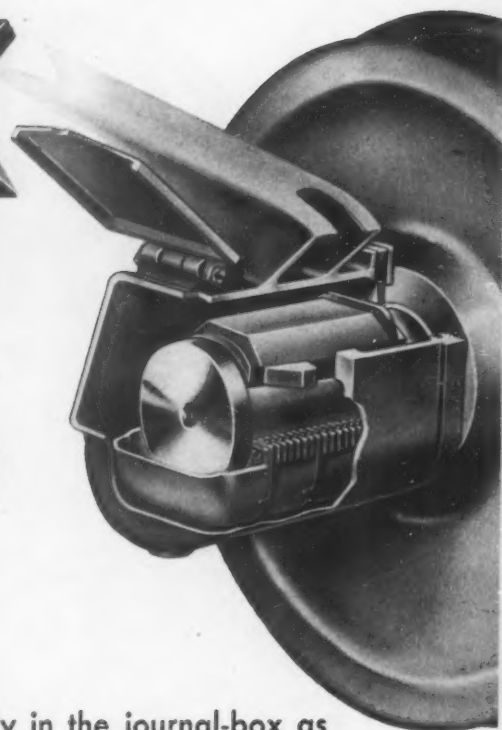


A.A.R. APPROVED

HOW **PLYPAK**

WASTE CONTAINER & RETAINER

REDUCES HOT-BOXES



1

PLYPAK fits snugly in the journal-box as shown above. Then the waste is packed in the PLYPAK according to instructions in the A.A.R. Lubrication Manual. The back-roll method is used where the railroad's instructions require it. Box fitted with PLYPAK requires 40% less waste than does a standard packed box.



2

The PLYPAK is a complete waste retainer and container. The combs are under the journal and prevent displacement of the waste. The points in the bottom hold the waste in position lengthwise and prevent it from coming out under the collar.

3

Waste automatically extrudes through the slots in the bottom of the PAK, as illustrated, forming a wick to draw oil from the box. This wick filters the oil leaving dirt in the bottom of the box.

4

Resilient, ridged sections on bottom side of PLYPAK permit oil to flow freely in journal box and also serve to hold the waste against the journal under all conditions of impact and track variations. Design develops a pumping action, keeping waste in action and eliminating glazing.



Inquiries invited

WAUGH EQUIPMENT COMPANY

420 LEXINGTON AVENUE • NEW YORK 17, N. Y.
Chicago • St. Louis • Canadian Waugh Equipment Company, Montreal

the *Original* **snubber spring**

Holland Volute Snubber Springs are NOT
miniature Draft Gears. They are
effective Load-Carrying SPRINGS as well as
highly efficient FRICTION SNUBBING
DEVICES for Freight Cars.



Either 1½" or 2½" Spring Travel

They are easily applied by simply
removing one standard Bolster
Spring from each spring nest,
and replacing it with a Holland
Volute Snubber Spring.

Write for Bulletin #15
describing in detail
the Unit Snubber.



HOLLAND COMPANY

332 S. MICHIGAN AVE. CHICAGO 4, ILLINOIS

it's balanced ventilation that makes the difference!

Shockproof...weather-proof...dependable under all conditions...ADLAKE Oil Lanterns give lasting satisfaction. For ADLAKE "Balanced Ventilation" keeps them on the job through every kind of wind and weather, under all types of service.

The reliability of ADLAKE lanterns has been estab-

lished through more than ninety years...and today, they are better than ever before. There's a complete line of ADLAKE crossing lamps, signal lamps, and lanterns for every railroad job. For complete information, drop a card to The Adams & Westlake Company, 1150 N. Michigan, Elkhart, Indiana. No obligation, of course.



THE **Adams &**

Established 1857
ELKHART, INDIANA
New York • Chicago

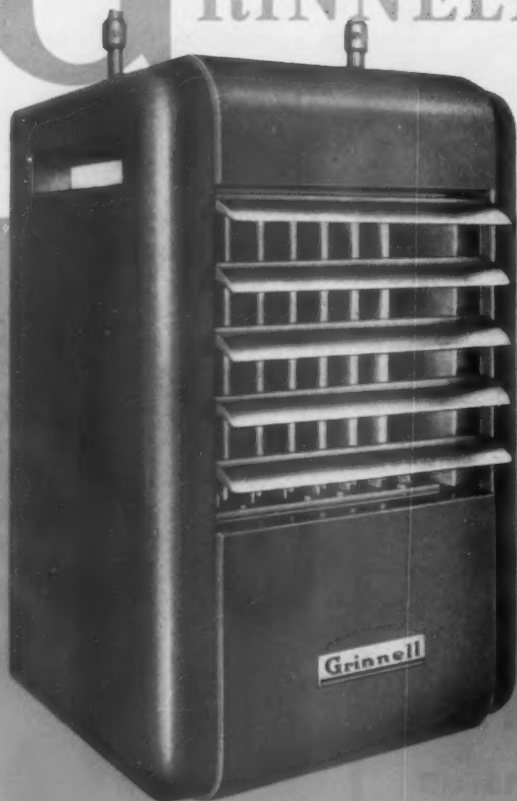


Westlake COMPANY

Manufacturers of ADLAKE
Specialties and Equipment for
the Railway Industry

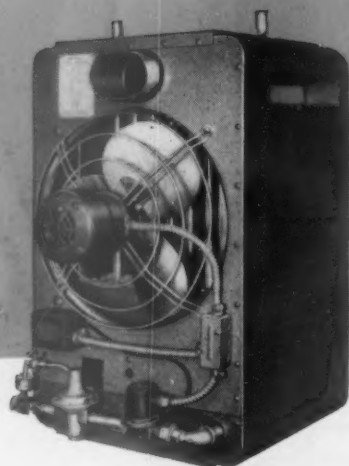
GRINNELL announces its new line of

GAS-FIRED UNIT HEATERS



Available in 7 sizes
— with input ratings
from 25,000 to
200,000 Btu's.

All parts readily
accessible for
periodic servicing.



GRINNELL
UNIT HEATERS FOR STEAM, HOT WATER, GAS

AUTOMATIC! EFFICIENT! ASSURE YEARS OF DEPENDABLE SERVICE

Grinnell gas-fired unit heaters are easy to install, simple to operate and maintain. Efficient performance assured — with any type of gas — by modern design of burners and heat exchanger, proper motor and fan unit.

Automatic safety pilot operates to shut off main gas supply if pilot burner goes out. Flash-back and extinction noise prevented by the burners' raised port design and proper port size for the gas used. Low speed motors have built-in thermal overload protection and automatic reset.

Additional features of Grinnell gas-fired unit heaters . . .

- Casing die-formed of heavy steel, with baked-on enamel finish
- Heat exchanger tubes and draft diverter of aluminized steel
- Combustion chamber of heavy steel, welded
- Burners of close-grained iron castings
- Adjustable louvers
- Burners and control assembly removable as a unit
- Hinged bottom pan permits cleaning interior of tubes
- Threaded pipe hangers for easy suspension
- Only wiring required is connection to room thermostat or manual switch
- Approved by the American Gas Association

WRITE FOR CATALOG



Grinnell Company, Inc., Providence, Rhode Island

Coast-to-Coast Network of Branch Warehouses and Distributors

Manufacturer of: pipe fittings • welding fittings • forged steel flanges • steel nipples • engineered pipe hangers and supports
Thermolier unit heaters • Grinnell-Saunders diaphragm valves • prefabricated piping • Grinnell automatic fire protection systems



"Pedigreed" blocks

for **Edgewater**

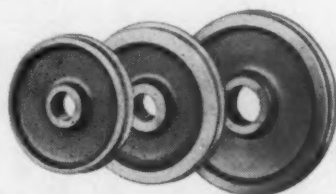


Wheels

Every block from which an Edgewater Rolled Steel Wheel is made carries a serial number that identifies the open hearth furnace heat from which it was made. This identification is carried through all succeeding processes, so the complete history of every Edgewater wheel is a matter of complete record. This "pedigree" enables us to maintain and improve the quality of Edgewater wheels.



Ingots are bottom-poured under carefully controlled conditions.



E

Edgewater Steel Company

P. O. BOX 478

PITTSBURGH 30, PENNA.



After cooling, ingots are "sliced" into blocks, which are inspected, weighed and individually numbered.



Completes Major Line Change Months Ahead of Schedule

with help of

Motorola 2-way Radio



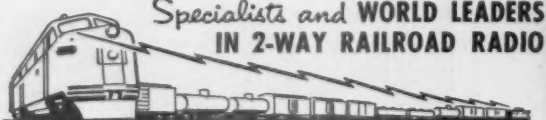
Official Union Pacific Railroad Photo



Supervisor Keeps Contact. Rugged Motorola mobile unit permits 2-way conversations with office or with other mobile units. Saves time, keeps supplies moving.

USE MOTOROLA 2-WAY RADIO FOR THESE RAILROADING OPERATIONS

- Yard-and-Terminal
- Train-to-Wayside
- End-to-End
- Wayside-to-Wayside
- Train-to-Train
- Car-Checking



Specialists and WORLD LEADERS
IN 2-WAY RAILROAD RADIO

Instant communications saves time and labor— speeds construction of new 42-mile line

Union Pacific opened its new main line linking Cheyenne and Dale, Wyoming, *months ahead of schedule*—thanks to modern construction methods and Motorola 2-way Radio.

Instant contact saved time, made incidents out of emergencies, minimized delays due to machinery breakdowns. 2-way radio kept work-train orders up-to-the-minute—permitted swift changes in schedules to meet varying conditions.

Today, as always, Motorola 2-way Radio is your greatest communications value. Eight exclusive features guarantee precision selectivity . . . durability . . . obsolescence-proof design. For full details, let your local Motorola engineer give you the story *soon*.

Write today to Dept. 2286-RA

2-way Radio

Motorola

Communications & Electronics, Inc.

A SUBSIDIARY OF MOTOROLA, INC.

900 N. Kilbourn Ave., Chicago 51, Illinois • Rogers Majestic Electronics Ltd., Toronto, Canada

WHEN ANSWERING THIS ADVERTISEMENT, PLEASE REFER TO "ITEM 5361"



Twice-As-Fast **FREIGHT CAR FINISHING!**

... specify GLIDDEN

"Two-Coats-in-One" Hot Spray System

Here's two-coat protection in a single application! Glidden Hot Spray System reduces painting costs and gets your cars back in service hours faster.

This new Hot Spray System requires less material and greatly reduces wasted over-spray. Shop capacity is nearly doubled! In addition, the new Glidden Hot Spray System insures more uniform coverage, longer life and a better all-around job. It can be used equally well in all temperatures with excellent results.

Glidden Hot Spray synthetic freight car enamels have been thoroughly tested and are now in use on the rolling stock of the nation's leading railroads.

For complete information, write: The Glidden Company, Railway Finishes Division, Department RA-953, 11001 Madison Avenue, Cleveland 2, Ohio. In Canada, The Glidden Company, Toronto.



THE GLIDDEN COMPANY

RAILWAY FINISHES DIVISION

11001 Madison Avenue • Cleveland 2, Ohio

In Canada:

The Glidden Company, Ltd.,
Toronto



Glidden

RAILWAY FINISHES

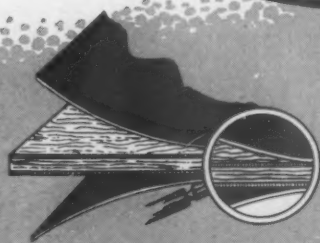


DOORS • SIDE PANELS
BULKHEADS and PARTITIONS
in This Luxury Car are **73% Lighter**
Than Standard Steel Construction . . .

...because they are **MET-L-WOOD**

● Met-L-Wood, used in passenger cars, locomotives and baggage cars cuts deadweight to a minimum consistent with specified strengths, stiffnesses and durability. As an example, Type 2P2-3/8" Met-L-Wood, used in side panels and partitions has the stiffness of 1/4" steel plate—yet weighs only 2.6 lbs./sq. ft. as against 10 lbs./sq. ft. for 1/4" steel plate!

Whether you require prefabricated Met-L-Wood units to your specifications, or can use stock sizes and finishes, the basic utility and economy of Met-L-Wood for railroad rolling stock construction is worth investigating . . . today. Write for details on your specific requirements. Our engineering staff will gladly assist you in adapting Met-L-Wood versatility to your needs.



MET-L-WOOD CORPORATION

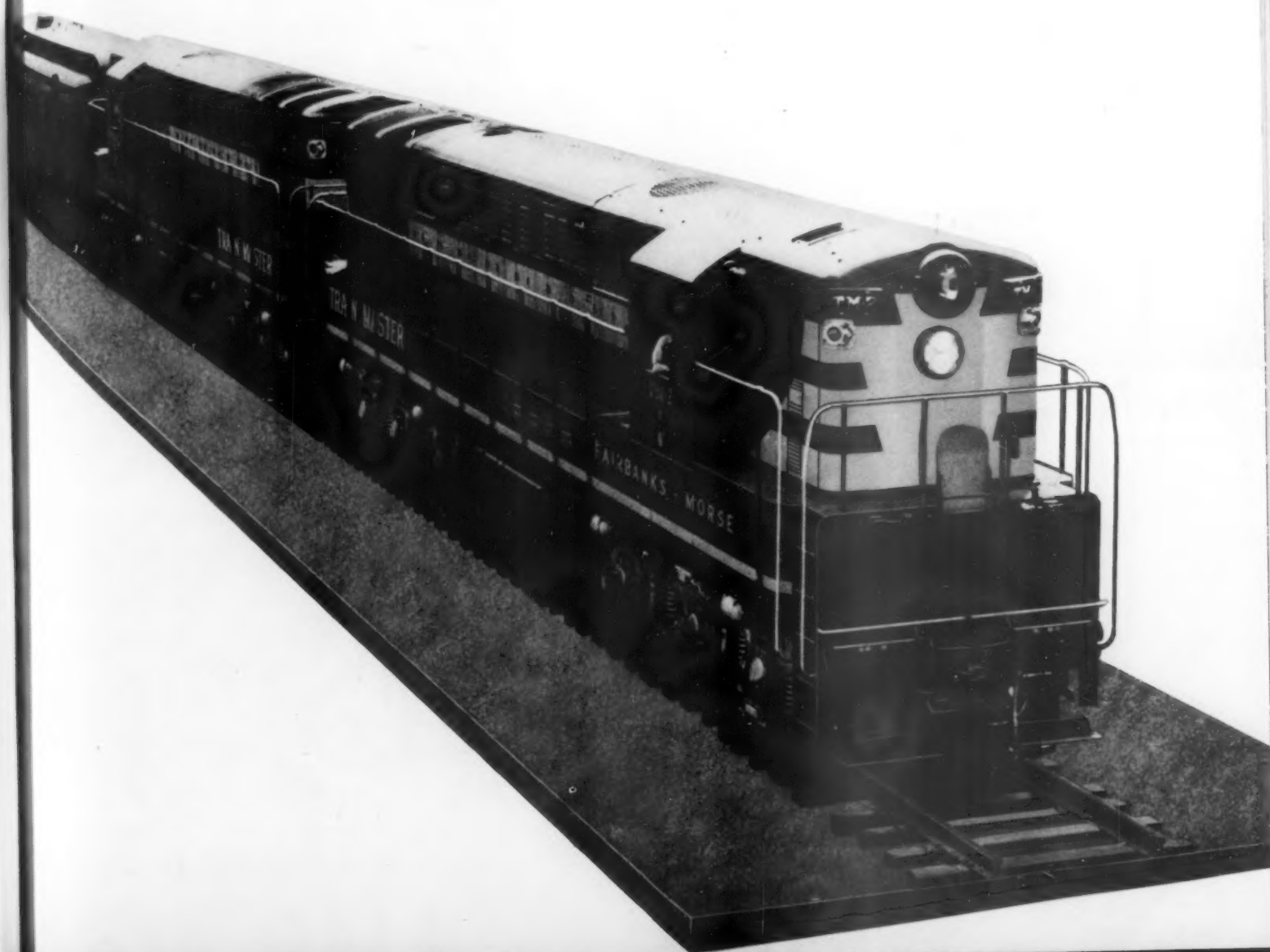
6755 West 65th Street, Chicago 38, Illinois

MET-L-WOOD • STRONG...LIGHT...Smooth Finish...Sound Deadening...Fire-Resisting...Insulating

TRAIN MASTER

adds a New Dimension in Railroading

VERSATILITY



1-Eastbound Fast Freight



Eastbound out of Barr yard with 4400 tons on Train 92 for Willard.

2-Switch the Yard



Upon arrival, TM-2 works the westbound hump yard for 24 hours.

Versatility on the Baltimore & Ohio Demonstrated in 48 Hours



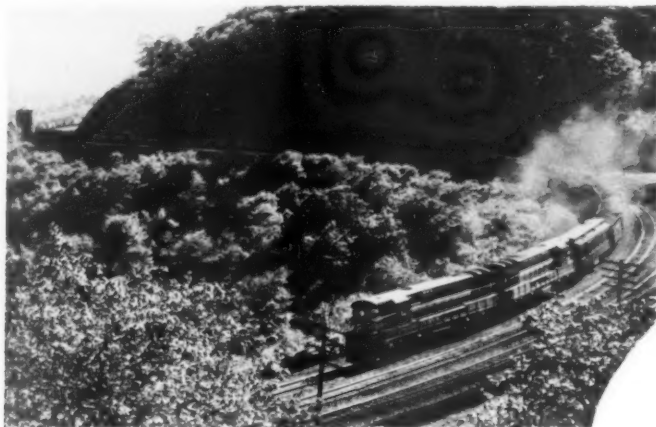
... and TM-1 is assigned to flat switch the short ladder yard, around the clock.

3-and returns 5400 tons Westbound

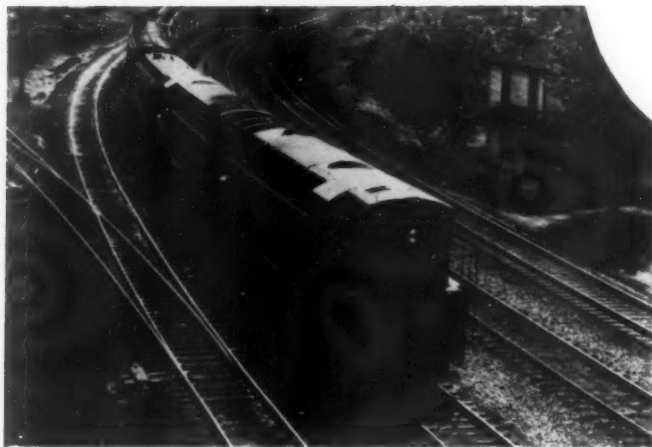


After handling all westbound tonnage in these two yards for three tricks, TM-1 and TM-2 return westbound on City 97 with 5400 tons of fast freight.

Coal Drags from Grafton tested Train Master's power upgrade and dynamic braking ability downgrade. Fast freight, drag freight, upgrade or down, TM is always master of its train.

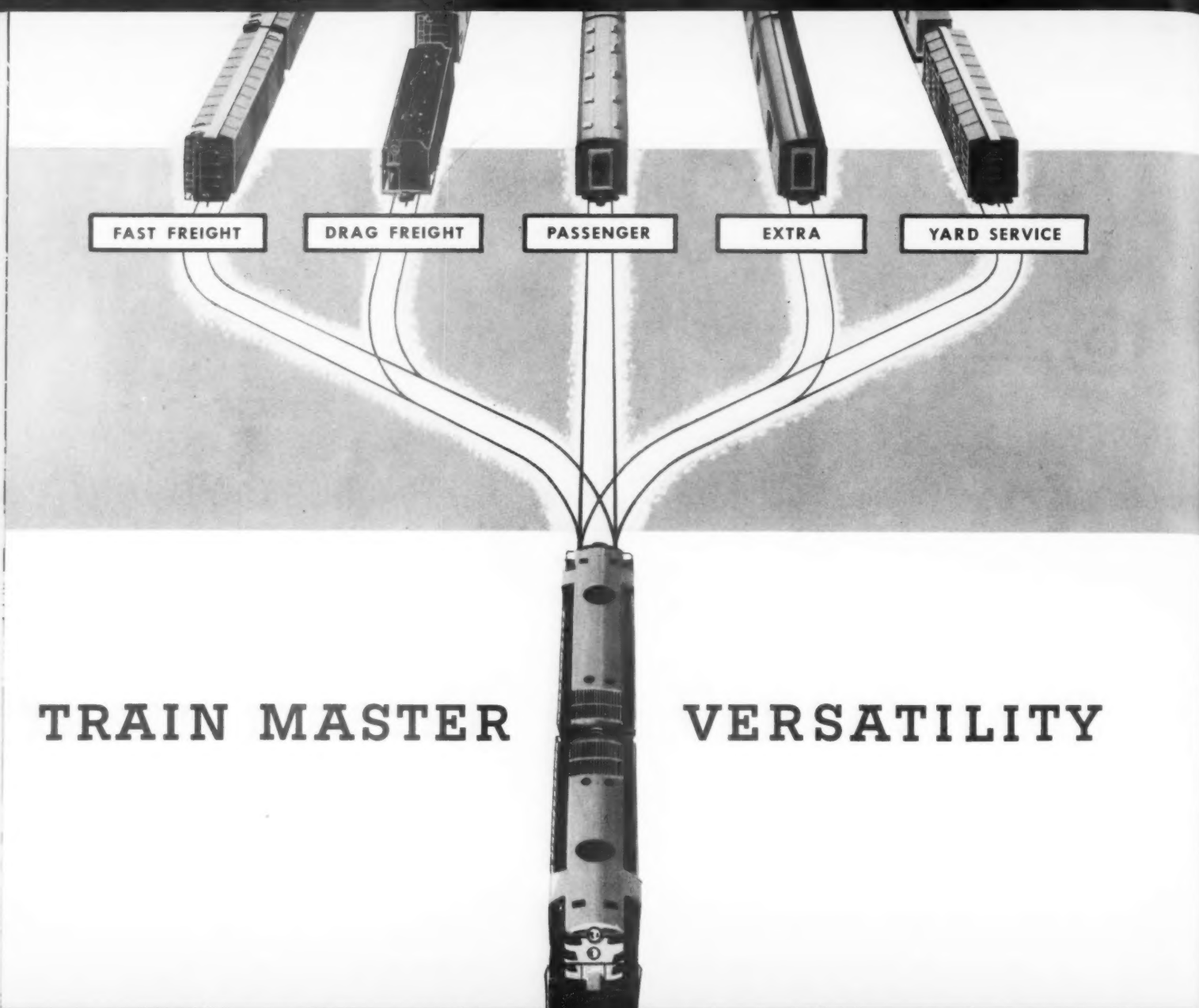


Coal Drag and Merchandise Train Test Train Master Power and Versatility



Round trip Connellsville to Cumberland over some of the B & O's worst grades ... with the Dynamometer Car reading every pound of drawbar pull, every mile of the way.





TRAIN MASTER

VERSATILITY

1400-HORSEPOWER
OPPOSED-PISTON
DIESEL ENGINE

SIX
HIGH-CAPACITY
TRACTION MOTORS

TOTAL WEIGHT
OF 375,000 POUNDS
—ALL ON DRIVERS

3000-
HORSEPOWER
DYNAMIC BRAKE

4500 LB/HR
STEAM
GENERATOR

These are the Train Master features that equip it ideally for every major motive power assignment on your road.

TM ability to switch overnight from one assignment to another gives you the *one* locomotive that

provides unique opportunity to gain greater operating efficiency in all classes of service.

The Fairbanks-Morse Train Master—the most useful locomotive ever built. Fairbanks, Morse & Co., Chicago 5, Ill.



FAIRBANKS-MORSE

a name worth remembering when you want the best

DIESEL LOCOMOTIVES AND ENGINES • RAIL CARS AND RAILROAD EQUIPMENT • ELECTRICAL MACHINERY • PUMPS • SCALES • WATER SERVICE EQUIPMENT • HAMMER MILLS • MAGNETOS

Septem

SERVICE

ITY

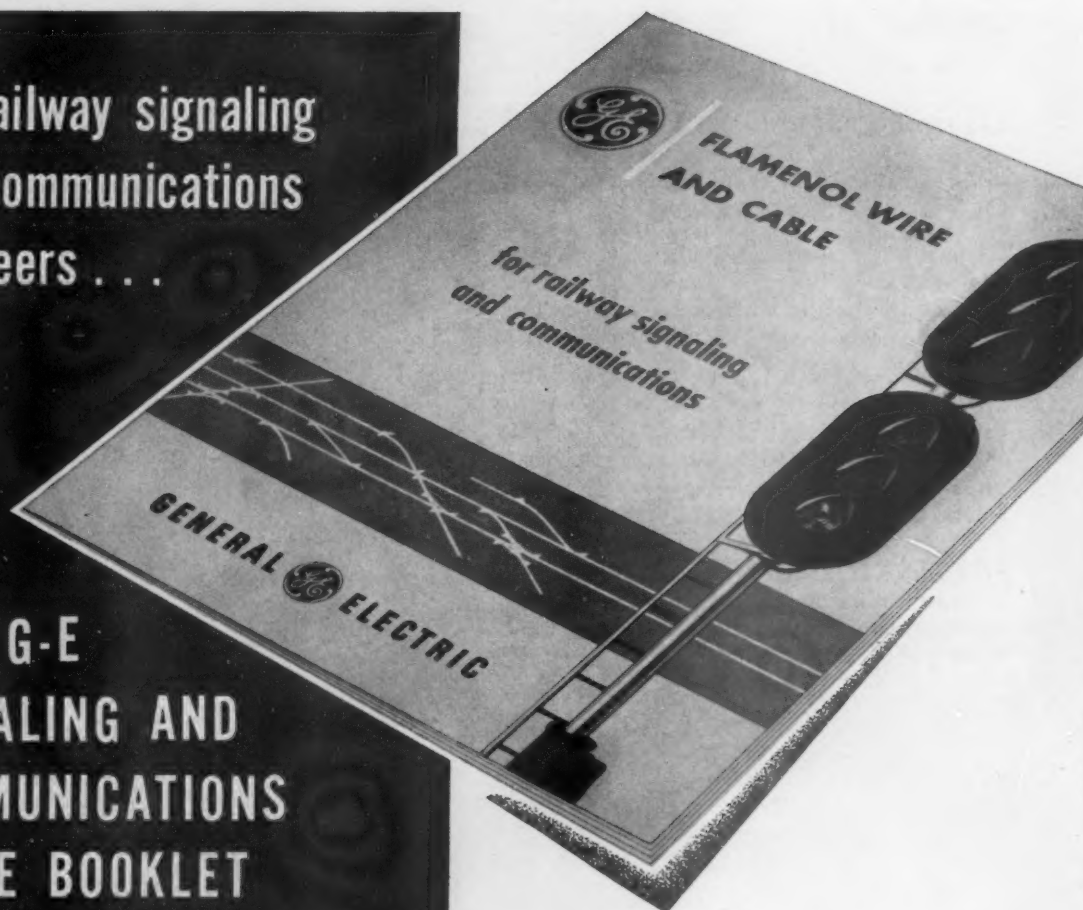
4500 LB/HR
STEAM
GENERATOR

operating

-the most
Morse &

For railway signaling
and communications
engineers . . .

**NEW G-E
SIGNALING AND
COMMUNICATIONS
CABLE BOOKLET**



**helps you select cables for interconnection,
right-of-way, and CTC applications**

Here is a new booklet on General Electric Flamenol* and polyethylene railway signaling and communications cables. This booklet recognizes your interest in keeping signaling systems abreast of the increasing demands of modern railroading. It discusses time-saving installation methods and ways of reducing maintenance costs.

The special requirements of many cable applications—in aerial and underground installations, in CTC, and for use as drops and line wires—can be met by using the cables shown in this book. Cable properties and specifications are included to help you select and use the G-E flame-, oil-, and sun-resistant cables that will add years of reliable service to your signal systems.

For your copy, write Section W96-974, Construction Materials Division, General Electric Company, Bridgeport 2, Connecticut.

*Registered Trade-mark General Electric Company

You can put your confidence in—

GENERAL  ELECTRIC



One of the 160 Uses of CONCRETE on Railroads

NO. 15 OF A SERIES

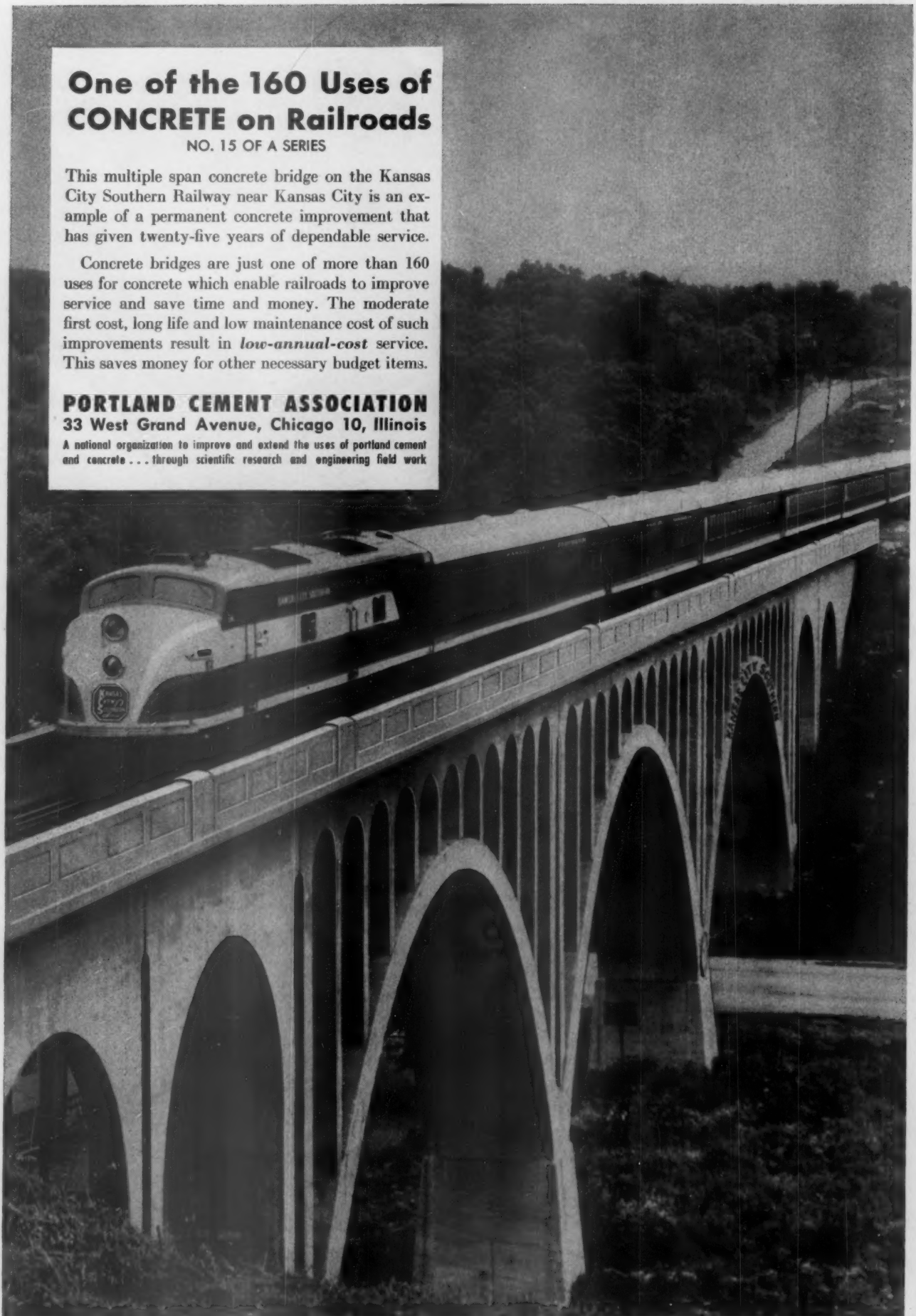
This multiple span concrete bridge on the Kansas City Southern Railway near Kansas City is an example of a permanent concrete improvement that has given twenty-five years of dependable service.

Concrete bridges are just one of more than 160 uses for concrete which enable railroads to improve service and save time and money. The moderate first cost, long life and low maintenance cost of such improvements result in *low-annual-cost* service. This saves money for other necessary budget items.

PORTLAND CEMENT ASSOCIATION

33 West Grand Avenue, Chicago 10, Illinois

A national organization to improve and extend the uses of portland cement and concrete . . . through scientific research and engineering field work



PEERLESS

PROTECTION

DON'T RISK today's high-priced lading . . . The H-I-B2, your **PEERLESS** protection against loss!

PEERLESS
EQUIPMENT
COMPANY

332 SOUTH MICHIGAN AVENUE
CHICAGO 4, ILLINOIS



Ignitron motive-power

AC-DC rectifier tube pioneers new electric-locomotive efficiency

The Westinghouse Ignitron Tube now adds the advantage of economical, easy-to-transmit a-c power to the efficiency and dependability of d-c traction motors.

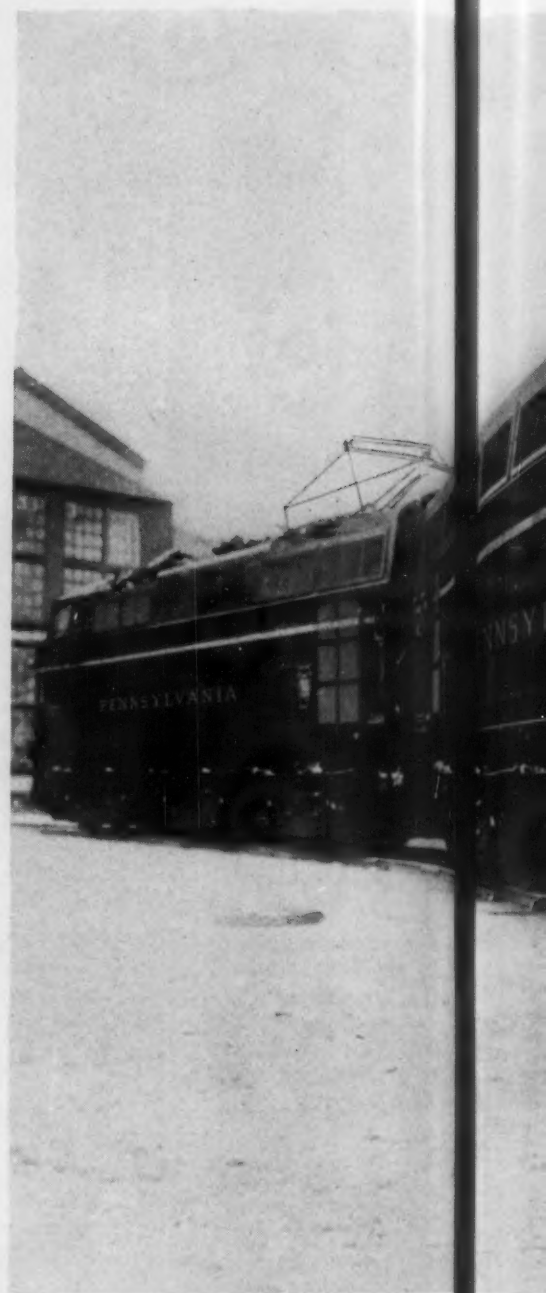
Two characteristics of this application contribute many benefits. A standard d-c traction motor can be used, with its ability to develop high torque at low speed and efficient performance at high speed while retaining low initial and low maintenance costs. The Ignitron tube also permits equal adaptability to either 25 or 60-cycle power, making practical the extension of railroad electrification at commercial frequencies.

Proof of the Ignitron locomotive's capability was convincingly demonstrated when it hauled 161 loaded coal cars for 130 miles at an average of 32 mph! In the measure of freight service performance, this typical run yielded an exceptional 434,980 gross ton-miles per train-hour.

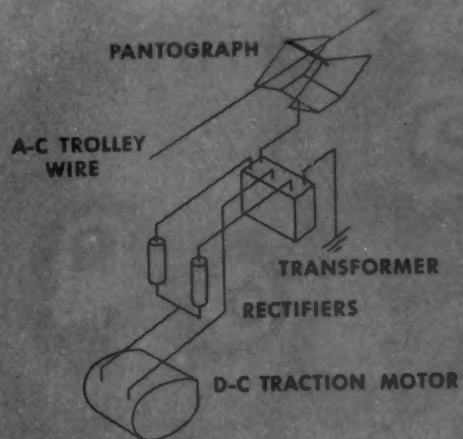
This Westinghouse locomotive features a number of significant operating advantages: Smooth, uniform starting and acceleration . . . ability to "hang on" at low speeds . . . lowered maintenance costs . . . higher tractive force . . . and easier riding. And by continuing to focus extensive research on the problem of better equipment for the railway industry, Westinghouse demonstrates its ability to further railroad economies and provide the ultimate in efficient, low-cost motive power. Westinghouse Electric Corporation, P. O. Box 868, Pittsburgh 30, Pennsylvania.

J-93498-A

YOU CAN BE SURE...IF IT'S
Westinghouse



Shown at right is the exclusive Westinghouse Ignitron Tube, high-capacity and trouble-free AC-DC rectifier which is the key to Ignitron Locomotive operation.



At left, a schematic drawing illustrates the principal units used in the conversion. AC is first picked up from the overhead trolley lines by conventional pantographs. It is then fed to a transformer and on into the Ignitron tubes where it is converted into efficient DC for powering the traction motors.

HERE'S AN ADVERTISEMENT ANY
RAILROAD WOULD BE PROUD TO RUN*



Relax...

on RIBBONRAIL when you go to Colossus City

Want the smoothest ride of your life? Then
ride one of the trains listed below — You
will literally glide for 120 miles.

For the Mid-West Central
has installed RIBBONRAIL
in every foot of the route.

You'll get a new travel thrill as your train
swishes over long lengths of continuous
welded rail from
which all bumps
and clickety-clacks
have been elimi-
nated.

Mid-West Central To Colossus City — Read Down				From Colossus City — Read Up			
No. 230	No. 232	No. 70			No. 71	No. 231	No. 233
8:00 a.m.	2:00 p.m.	4:20 p.m.	Lv. Markersburg	Ar.	12:10 p.m.	6:00 p.m.	3:40 a.m.
9:45 a.m.	3:45 p.m.	5:20 p.m.	Lv. Wayboro	Ar.	11:25 a.m.	4:05 p.m.	1:40 a.m.
10:45 a.m.	4:35 p.m.	6:00 p.m.	Lv. Mid Town	Ar.	11:02 a.m.	2:55 p.m.	12:30 a.m.
12:30 p.m.	6:15 p.m.	7:30 p.m.	Ar. Colossus City	Lv.	9:00 a.m.	1:00 p.m.	10:30 p.m.



Of course, this advertisement is
make-believe, there is no Colossus
City — no Mid-West Railroad... But
in the very near future you'll see a lot of
newspaper advertisements like it. And they
will be real. Why? Because RIBBONRAIL not
only provides smooth riding for passengers, but
it cuts track maintenance costs, saving railroads
thousands of dollars year after year. There are no
joints to wear, no rail ends to batter with RIBBONRAIL.

OXWELD RAILROAD SERVICE COMPANY
A Division of Union Carbide and Carbon Corporation



Carbide and Carbon Building Chicago and New York
In Canada:
Canadian Railroad Service Company, Limited, Toronto

The term "Ribbonrail" is a service mark of Union Carbide and Carbon Corporation.

Ribbonrail
SERVICE MARK



You'll get more pay hours from your freight cars with Pittsburgh's Remarkable *Hot-Spray* **CARHIDE**



Provides twice as much paint with one application . . . Puts cars into service more quickly . . . Keeps them looking better longer

HOT-SPRAY CARHIDE—latest development in Pittsburgh's famous line of finishes for freight rolling stock—brings important savings in time and labor to shop, traffic and operating departments.

One coat of Hot-Spray CARHIDE is equal to two coats applied cold.

● In Hot-Spray CARHIDE, heat is used in place of conventional thinner to adjust viscosity to weather and temperature conditions. In all seasons of the year, it goes on more uniformly, has better adhesion, dries quickly to a higher gloss, is more durable, and retains its initial appearance for a longer time.

● Hot-Spray CARHIDE can be applied with approximately half the usual air pressure. This lessens the amount of "fog" in the paint shop—more of the solid material reaches the surface being

painted. More paint is applied with less labor. As there is much less thinner to evaporate from the paint, imperfections from shrinkage are greatly reduced.

● Refinishing is speeded as half the time needed to apply two coats, as well as drying time between coats, is eliminated. Shop capacity is practically doubled without increasing space, manpower or equipment.

● We'll be glad to give you further information about this new kind of freight car paint. A wire, telephone call or letter from you may save time and money.

PITTSBURGH PLATE GLASS CO., Industrial Paint Div., Pittsburgh, Pa. Factories: Milwaukee, Wis.; Newark, N. J.; Springdale, Pa.; Atlanta, Ga.; Houston, Texas; Los Angeles, Calif.; Portland, Ore. Ditzler Color Div., Detroit, Michigan. The Thresher Paint & Varnish Co., Dayton, Ohio. Forbes Finishes Division, Cleveland, Ohio. M. B. Suydam Div., Pittsburgh, Pa.

Pittsburgh Railway Finishes For Every Need

CARHIDE—for wood and metal freight cars of all types.

CARHIDE (Alkali and Acid-Resistant)—for covered hopper, refrigerator and tank cars.

LAVAX SYNTHETIC ENAMELS—for locomotive and passenger cars.

STATIONHIDE—adds beauty and attractiveness to stations.

IRONHIDE—for iron and steel fixed properties.

SNOLITE—white, fume-resistant paint for signs, crossing gates, fences and cattle guards.



PITTSBURGH PAINTS

PAINTS • GLASS • CHEMICALS • BRUSHES • PLASTICS • FIBER GLASS

PITTSBURGH PLATE GLASS COMPANY

How to make packings last longer

Tips by Johns-Manville Engineers to help you keep equipment running

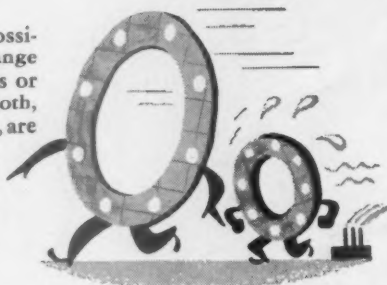


The right type
of gasket
-properly installed
-saves many
a costly sealing
headache...



I work better
when I'm thin.

Use as thin a gasket as possible for the particular flange condition. When flanges or surfaces are flat and smooth, thinner gaskets, as a rule, are better than thicker gaskets. Where surfaces are rough and do not line up perfectly, thicker gaskets usually do a better job.



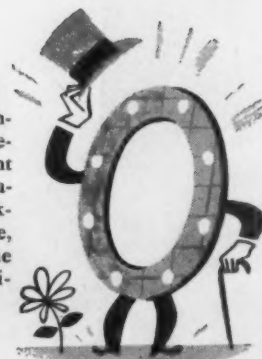
I give better service if
these rules are followed, too.

Where possible, have ring-cut gaskets used. They are preferable to full-face gaskets. See that the gasket is properly centered and does not project inside the flanges. Make sure flanges are perfectly clean, true, and parallel. Have bolts followed up the next day after installing new gaskets.



Be sure I'm in style.

It's hardly worth while to use inferior quality gasketing for a replacement job, when the right style of a good quality gasket material can be obtained. For a packing that will give good service, be sure the style selected is one recommended for your conditions.



Don't use oil on me!

Often gasket materials have rubber in their composition, and oil causes deterioration of rubber. If it is desirable to graphite one or both surfaces of the gasket for easy removal, use a solution of graphite and water, with or without a small amount of glycerine. If the joint is to be permanent, it is better not to treat the gasket at all.



You can count on these famous
Johns-Manville Quality Packings for
long lasting service, superior performance—

J-M Service Sheet, Style No. 60—For general service against saturated and superheated steam, air, gas, water, hot oil, etc.

J-M Seigelite Sheet, Style No. 711—For use against water and hazardous liquids such as gasoline, benzene, oils.

J-M Mobilene Sheet Packing, Style No. 101—Resists high temperatures and pressures on cylinder heads, manifold flanges, etc. of gasoline equipment.

J-M Kearsarge Handhole and Manhole Gaskets, Style No. 116—Durable, pliable and resilient. Made of folded and cemented plies of asbestos-metallic cloth.

J-M Spirotallic Boiler Gaskets, Style No. 914—Spirally wound metal-asbestos gaskets of unusual strength and resilience.

J-M Liberty Red Rubber, Style No. 107—For water, air and steam at low temperatures and pressures.



Your Johns-Manville Representative will help, too! He will be glad to talk over your packing problems with you to help you get the most out of your packings... or to help you select the most efficient and long wearing packing for your job. Johns-Manville, Box 60, New York 16, N. Y. In Canada, 199 Bay St., Toronto 1, Ontario.

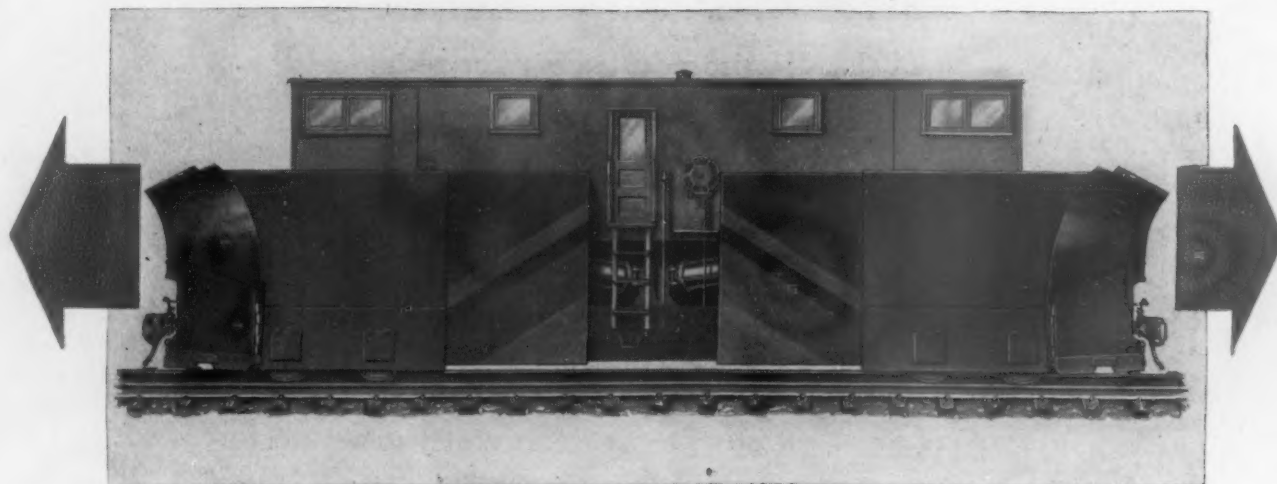


Johns-Manville PACKINGS & GASKETS

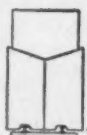
PLOWS

BOTH WAYS

ELIMINATES COSTLY TURN-AROUND TIME!



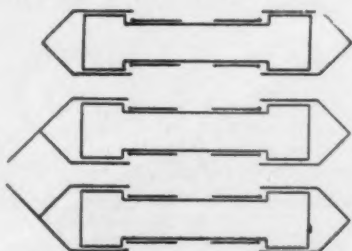
The **NEW** Jordan "TWIN-TYPE" SNOWPLOW



Front snowplow flanges even below rail tops—leaves clean rail surface for better traction.



Here's the front snowplow in travelling position—high above rail tops.



Adjustable front snowplow wings enable you to plow to both sides at once, or to a single side.



Pneumatically operated snow wings on sides of car extend way out—provide a wide path for equipment clearance.

Here is the answer to the trend away from use of turntables and similar turn-around facilities: the new Jordan "Twin-Type" Snowplow. It's double-ended . . . eliminates costly turn-around time . . . and each end has all the rugged reliability and operating features that have made Jordan snowplows famous.

- Arrow-ended welded underframe for maximum strength, even out to tip of front snowplows.
- Cab is insulated; has provision for heating if desired.
- Controls at each end of cab.
- Maximum visibility and comfort for operators.

Like to know more? . . . Use this handy coupon.

JORDAN SPREADERS • DITCHERS • SNOWPLOWS

O. F. JORDAN COMPANY • East Chicago 1, Indiana

Please send free "Twin-Type" Snowplow data.

Name & Title _____

Company _____

Address _____

City-Zone-State _____

It's availability that counts!

A majority of the Diesel locomotives in service on American railroads today are equipped with Harrison radiators and oil coolers. This is because railroad operators have found that Harrison equipment keeps the temperature of jacket water and lubricating oil under control, thus increasing the *availability*—the *earning power*—of Diesel locomotives.

HARRISON
RADIATOR DIVISION
GENERAL MOTORS CORPORATION, LOCKPORT, NEW YORK

HARRISON



International

THERE'S A NEW PRECISION IN FREIGHT CAR CONSTRUCTION

THE INTERNATIONAL UNDERFRAME

A much sturdier underframe incorporating a maximum utilization of material section with minimum weight.

THE ALL-PURPOSE BULK-LADING DOOR

Requires no inside grain door! ... and has an access door for loading, inspection and sampling. Positive retention on the car structure.

ALL-WELDED CAR SIDES

Delivered ready to assemble, to car owners who assemble their own cars. Maximum welded attachment to the side plate and side sill upper elements.

THE RACE IS TO THE SWIFT... In today's race to step up schedules, rush cars through the yards and maintain higher speeds on the line, the job is to deliver the goods faster!

...THE BATTLE TO THE STRONG! In order to set and maintain such a pace, railroads must keep construction techniques abreast of schedules. Cars must be as well constructed to withstand these new speeds as motive power is to deliver them!

International Steel Company—by diligent research and faithful adherence to proper design and construction techniques—has developed the necessary ingredient to successfully meet today's problems—precision construction based on true conceptions.

INTERNATIONAL STEEL COMPANY RAILWAY DIVISION
EVANSVILLE 7, INDIANA

INSIDE AN EXIDE-IRONCLAD



Inside... where it counts most... EXIDE-IRONCLAD is entirely different than any other battery. It's made that way by EXIDE'S exclusive IRONCLAD slotted-tube construction... a principle that provides direct operating-hour savings for you.

OF ALL BATTERIES, ONLY EXIDE-IRONCLADS HAVE POWER TUBE POSITIVES

The positive plate is different... unique... exclusive. It is the most effective retainer of active material yet demonstrated in heavy duty service. Slotted tubes contain the active material. So fine are the slots that, while permitting easy access of electrolyte, they retard the active material from washing out, hold it during repeated cycles of charge-discharge, and the vibration of rough use.

Today's battery-powered equipment is being used harder than ever before. Unless the batteries have internal shock protection they tend to deteriorate under hard usage—both electrical and mechanical. Only Exide-Ironclad has the plus-protection of the tubular positive that can withstand today's more exacting and rigorous heavy-duty battery services.

Your EXIDE sales engineer will give you the factual inside story. See for yourself why *only* an EXIDE-IRONCLAD gives maximum day-after-day service under the most difficult operating conditions... *with a minimum of maintenance expense.*

THE ELECTRIC STORAGE BATTERY CO.
Philadelphia 2

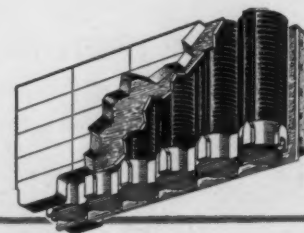
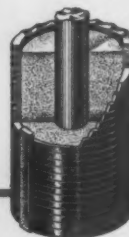
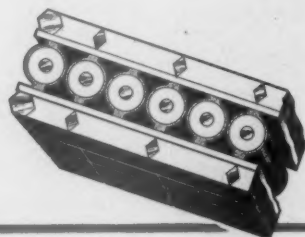
Exide Batteries of Canada, Limited, Toronto

1888... DEPENDABLE BATTERIES FOR 65 YEARS... 1953

Cross section shows relation of positive plate to separators and negative plate. Note the much greater exposure of active material to electrolyte as compared with that of the usual flat positive plate. This greater exposure makes possible the high power ability and uniform-voltage characteristics of the Exide-Ironclad. The negative plates have been made extra heavy to balance the increased capacity of the power tube positives.

Running through center of each tube is an alloy core which is cast with the heavy top cross bar. These form the sturdy, non-buckling grid. Both core and top bar are made of Exide's new corrosion-resistant Silvium, an alloy of silver, lead and other components, which adds greatly to plate's long life.

New polyethylene insulating tube sealer of acid-proof, non-corroding plastic fits snugly into bottom of slotted tubes and further reduces loss of active material. Thus more active material remains available, and the high battery capacity is maintained for a longer working life.

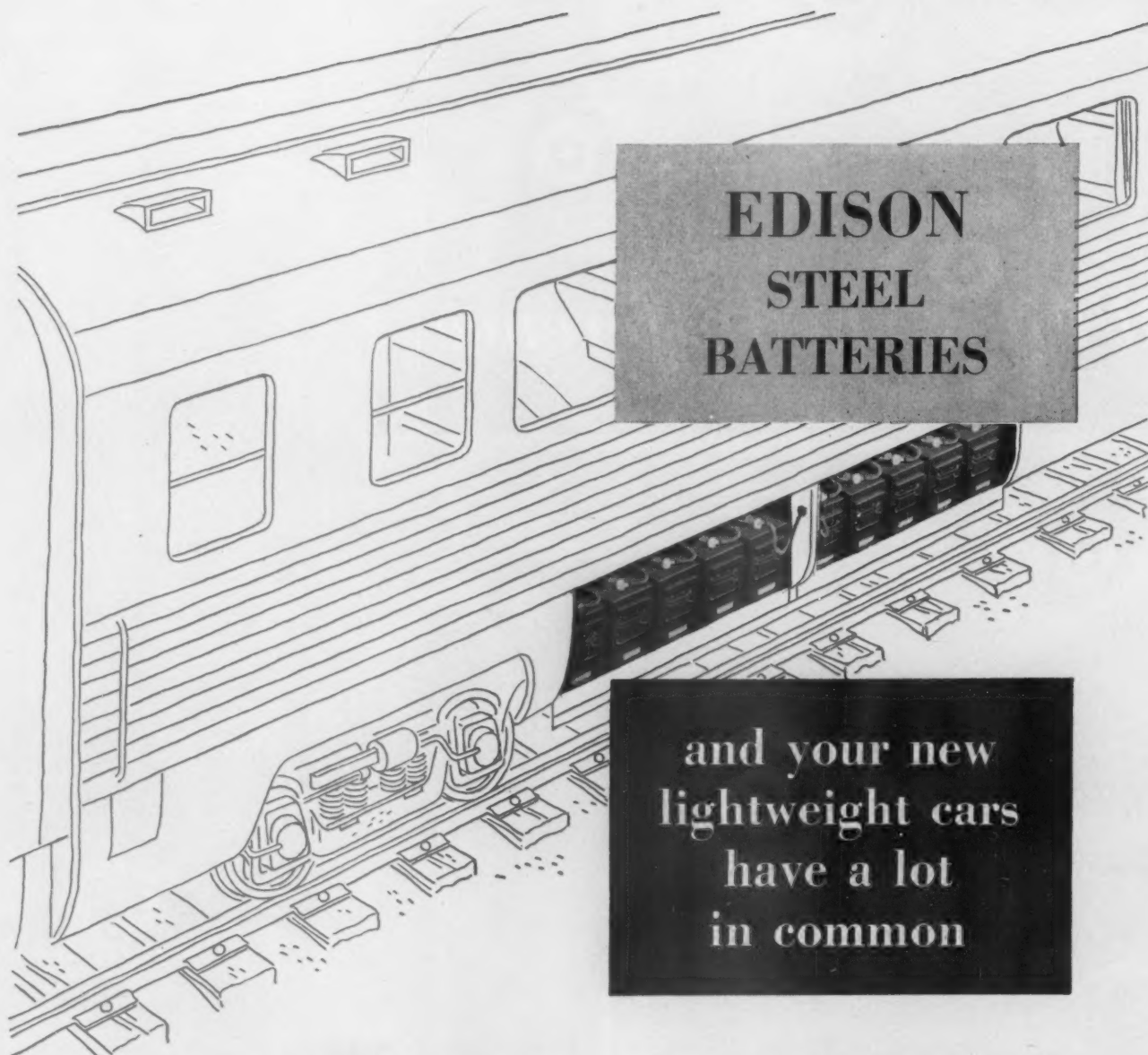


Exide-Ironclad

YOUR BEST POWER BUY... AT ANY PRICE

You'll Find The Difference





EDISON STEEL BATTERIES

and your new
lightweight cars
have a lot
in common

Like the streamlined passenger trains they serve, EDISON batteries are amazingly strong yet *unusually light*. Inside and out, each cell is made of steel. Result is the strongest cell construction known . . . plus a weight saving up to 2,000 pounds per car.

Electrically, too, they're unique. There are no finish-rate limitations. Recovery after every interval of discharge can be just as rapid as generator output permits. Result: high road capacity . . . seldom any need for yard charging. They have no discharge limits; will operate self-regulating inversion equipment correspondingly longer in emergencies.

What's more, overcharging, over-discharging, even accidental reverse-charging or short circuiting can't harm them.

Electrically and mechanically an EDISON is the *most dependable* battery you can buy. Add to this a service life so long that it results in the lowest over-all cost of operation. For more facts, send for Bulletin SB 3802; see your Edison field engineer.

**Most Dependable Power—
Lowest Over-all Cost . . .**
you get both with an EDISON



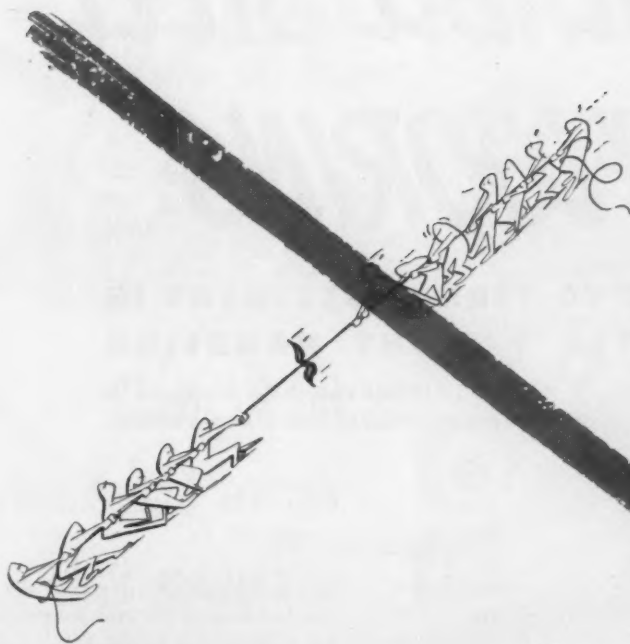
EDISON

Nickel • Iron • Alkaline
STORAGE BATTERIES

Edison Storage Battery Division of
Thomas A. Edison Incorporated, West Orange, N. J.

get off the losing side!

Don't let this be your side of a coating story. Peeling, scaling paint exposes your equipment and your company to extra-heavy depreciation costs, to repair jobs and high maintenance charges, to poor public opinion.



Look at this car — day in, day out under attack from rain, heat, cold, sunlight, corrosive cargoes and fumes, vibration, and pounding with sledge hammers to loosen loads . . . and *it keeps in good condition*. That's the kind of service VINYLITE Resin coatings give you.

They're tough, tight-sticking coatings that defy man's abuse and the ravages of the elements. They're just as serviceable on metal, masonry, or concrete.

Properly applied, coatings based on VINYLITE Resins won't crack, chip, peel or fade. They resist oil, grease, chemicals, brine, alkalis and most strong

acids. No matter what you coat, wherever service is rough, VINYLITE Resin coatings have proved they can take it.

For a new folder giving case histories of coatings on transportation equipment, suggested formulations based on BAKELITE and VINYLITE Resins, and a list of suppliers, write Dept. QS-73.

**...get on the
side with
coatings
based on**

Vinylite
BRAND
RESINS



BAKELITE COMPANY

A Division of

Union Carbide and Carbon Corporation



30 East 42nd Street, New York 17, N.Y.



NAILABLE STEEL FLOORING

A LONG-TERM INVESTMENT IN BETTER FREIGHT HANDLING

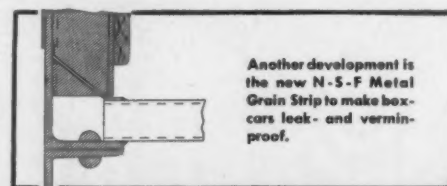
Made of tough N-A-X HIGH-TENSILE steel, N-S-F is designed for modern freight handling... withstands all kinds of loading methods.

In normal service, NAILABLE STEEL FLOORING should last the life of the car. So, when you invest in N-S-F for your equipment, you have a long-term investment that keeps paying off for many years. Not only does N-S-F provide improved floor structure but also serves to reduce stresses of impact shocks at critical points on the underframe.

And most important of all—N-S-F increases availability of boxcars and especially of gondolas. Blocked and skidded loads in these cars are held

with maximum security, and the same cars can be used for bulk freight.

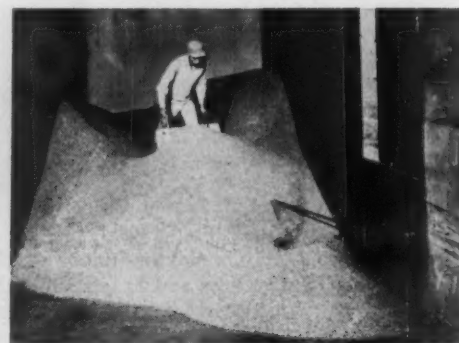
For better car utilization, reduced maintenance, fewer damage claims—be sure to have NAILABLE STEEL FLOORING.



Another development is the new N-S-F Metal Grain Strip to make boxcars leak- and vermin-proof.



Finished freight is securely held by N-S-F.



N-S-F provides tight, smooth flooring for bulk loads.

GREAT LAKES STEEL CORPORATION

STEEL FLOOR DIVISION

Ecorse, Detroit 29, Michigan

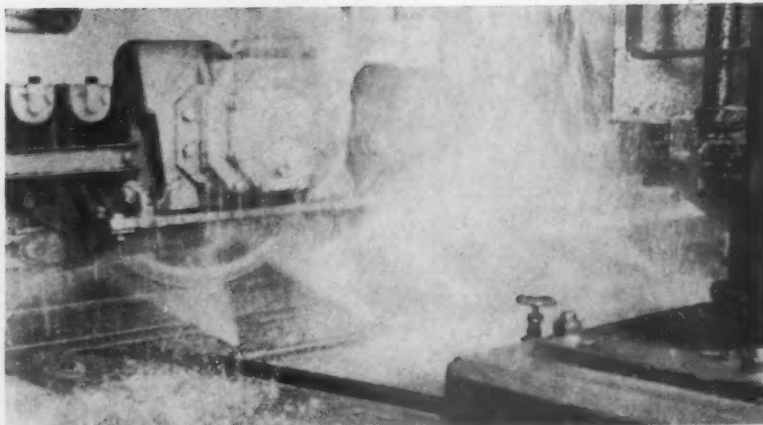
NATIONAL STEEL CORPORATION



SALES REPRESENTATIVES IN CHICAGO, PHILADELPHIA, ST. LOUIS, ATLANTA, OMAHA, DENVER, SAN FRANCISCO, MONTREAL AND NEW YORK.

Save Money

Clean diesel
wheels and trucks
with automatic
Oakite "track-trip"
spray-washing



Oakite automatic "track-trip" wheel cleaning set-up saves money. It prevents solution and rinse water waste. Top picture, cleaning. Bottom picture, rinsing.

YOU ARE LOOKING at a set-up for cleaning and rinsing diesel wheels and trucks. It was designed by Oakite for a big Western Railroad. These pictures were taken at that yard.

THIS ROAD wanted to eliminate costly, time-consuming manual cleaning. They were looking for some simple, inexpensive mechanical method ... one they could build themselves in their own yard.

HERE'S HOW IT WORKS. Pressure, transferred from wheel flange to track tripper, depresses valves for spray cleaning. Solution spray responds only to wheel pressure. Spraying stops as wheel pressure diminishes.

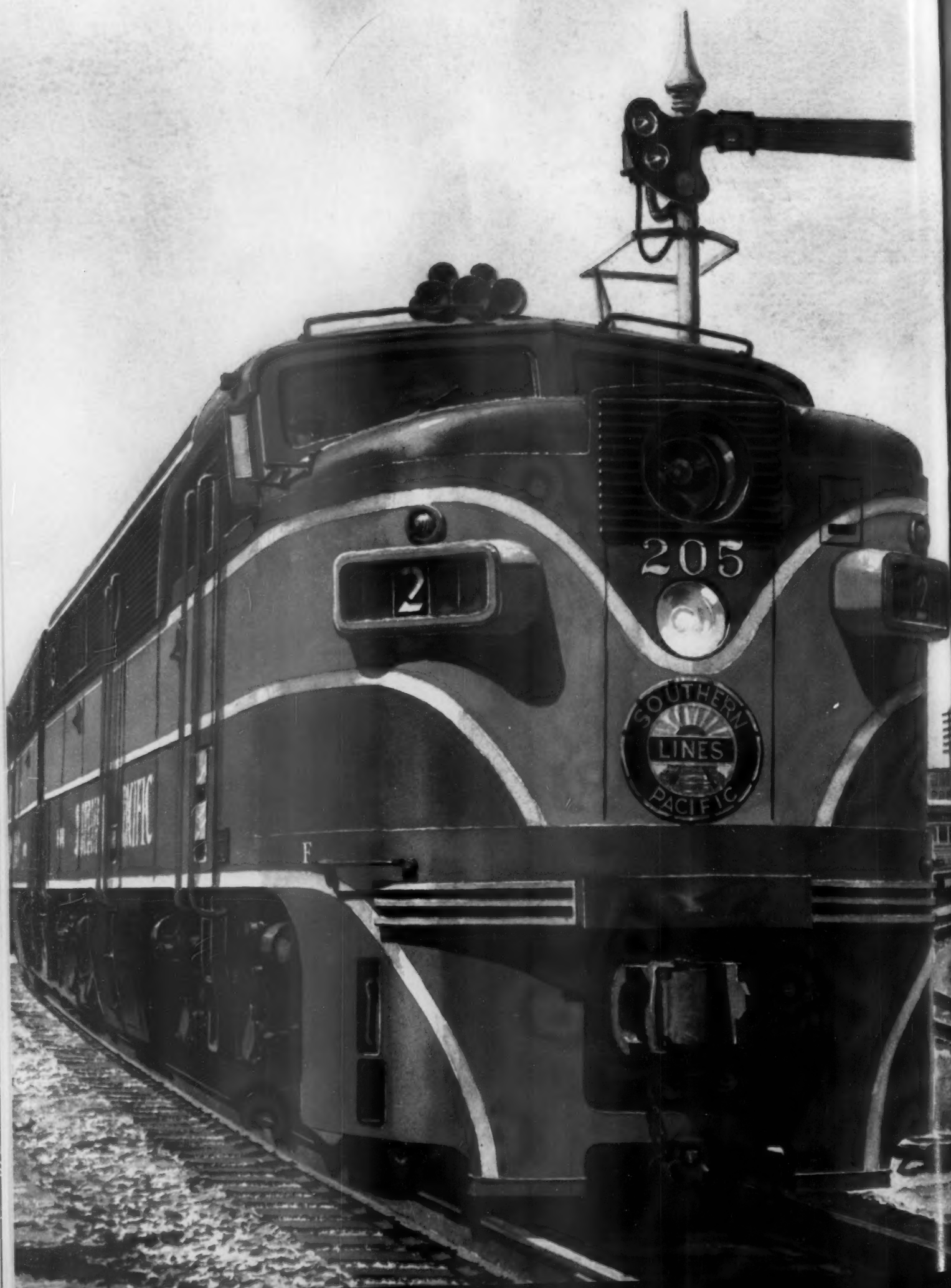
RESULTS. Considerable savings in solution upkeep and less waste of rinsing water since spraying occurs only as wheels enter spraying area. No time wasted for manual valve adjustments. No hand scrubbing.

If you'd like more information on washing diesel wheels and trucks just drop us a line. We'll be glad to send you complete details, drawings.

Oakite Products Inc., 46 Rector Street, New York 6, New York

OAKITE

RAILWAY DIVISION



Alco-GE Diesels Run 20,000 Trouble-Free Miles Per Month for Texas & New Orleans

Twenty thousand **trouble-free** miles per locomotive per month in heavy-demand passenger service! That's the month-after-month record attained with 4-year-old Alco-GE passenger locomotives by the Texas & New Orleans Railroad of the Southern Pacific System.

Despite this outstanding record of railroading efficiency, the T&NO now is aiming for an even better record—1,250,000 miles of service from its Alco-GE locomotives between overhauls.

Alco-GE locomotives are used on every

dieselized train in T&NO passenger service, including the crack SUNSET LIMITED and the mile-a-minute SUNBEAM. Proved performance makes this motive power the logical choice to help maintain the T&NO reputation for comfortable, on-time passenger travel.

Today, Alco-GE diesel-electrics are piling up revenue miles in passenger, freight, and switching service all along the 4,291 miles of T&NO track . . . exemplifying the modern methods and operating know-how of this progressive railroad.

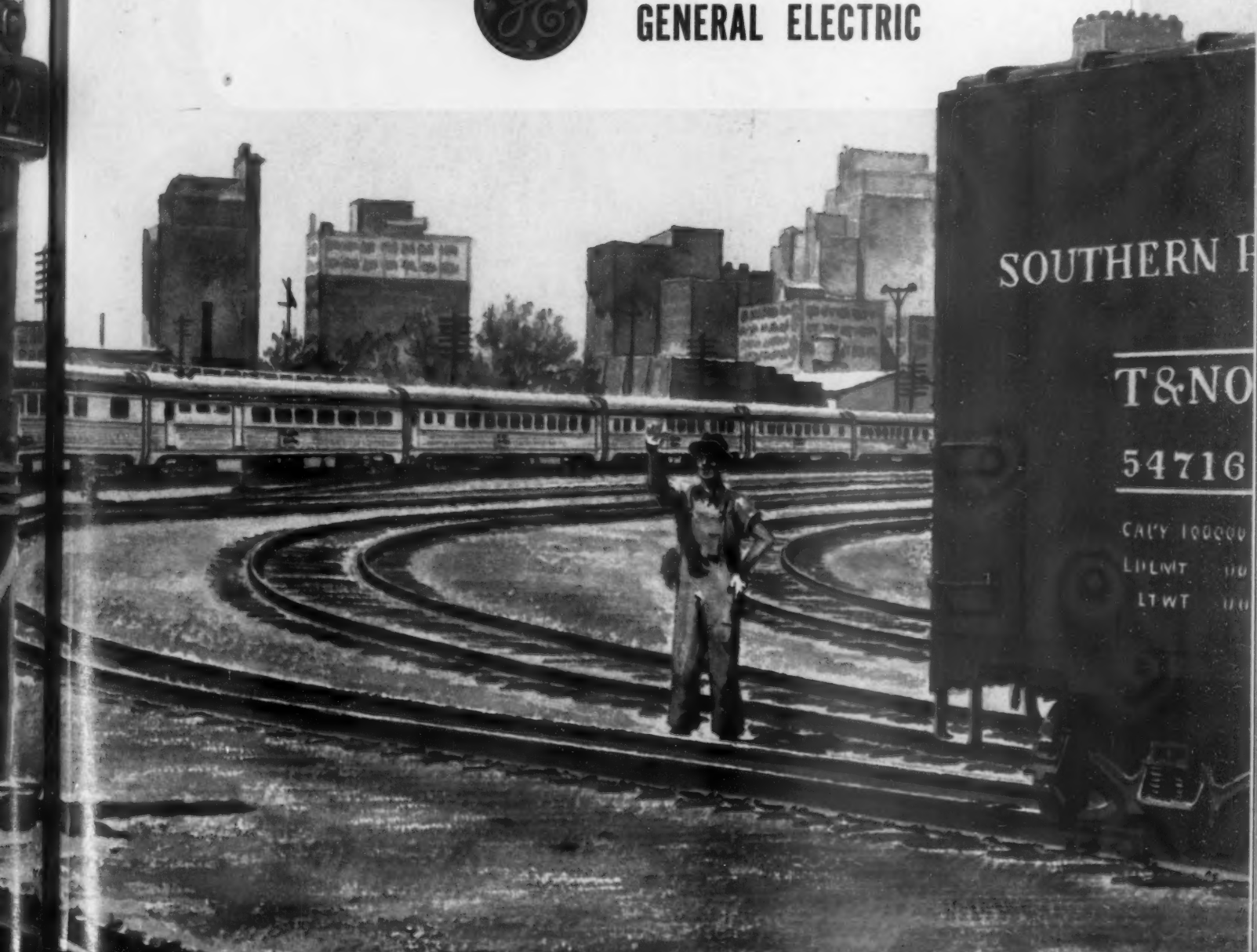
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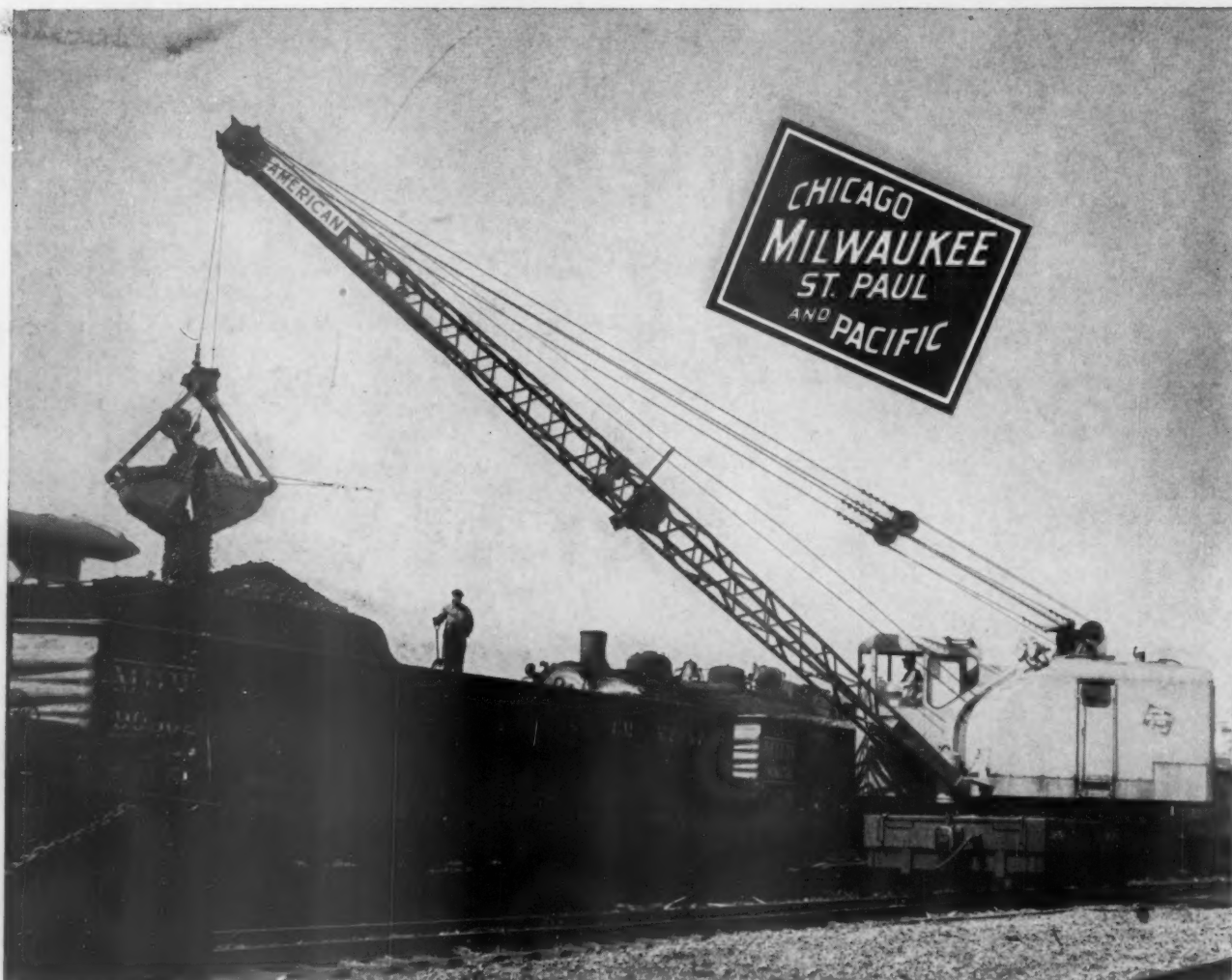


AMERICAN LOCOMOTIVE

and

GENERAL ELECTRIC





Around-the-clock DEPENDABILITY

Coaling engines around-the-clock seven days a week, week in, week out is a tough assignment. But that's the work schedule delivered the year around by this dependable American DiesElectric Locomotive Crane for its owners, the Milwaukee Road.

This is just one of hundreds of American DiesElectric Locomotive Cranes that solve materials handling jobs for their owners every day, quickly, economically. You'll find these cranes in almost every industry . . . steel, mining, pulp and paper, construction and indus-

trial plants of all kinds.

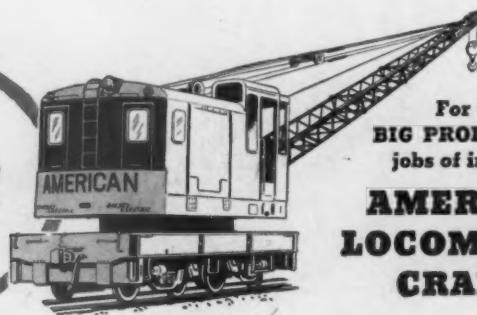
Fast, smooth-operating American DiesElectric Locomotive Cranes with diesel power to the deck, electric power to the trucks require a minimum of maintenance. In fact, detailed cost and operating records prove an American DiesElectric Locomotive Crane will write off its cost fully in five short years!

Does your company have a materials handling problem? Our specialists are at your service! Write or call today!

Modernize...economize...with

American Hoist

AMERICAN HOIST & DERRICK CO. • ST. PAUL 1, MINN.

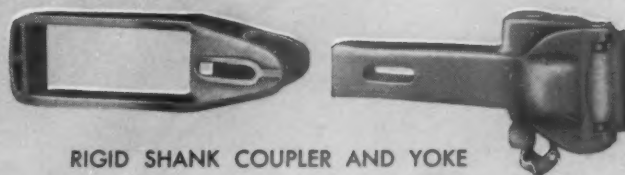
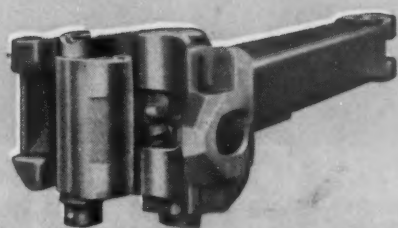


For the
BIG PRODUCTION
jobs of industry...

**AMERICAN
LOCOMOTIVE
CRANES**

BUCKEYE

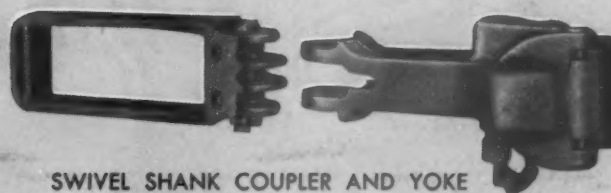
STEEL CASTINGS FOR RAILWAY EQUIPMENT



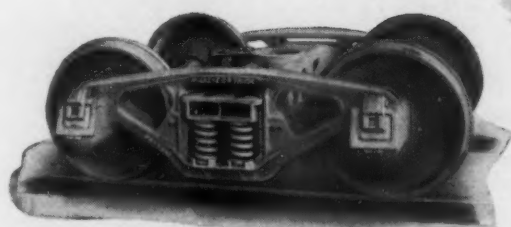
RIGID SHANK COUPLER AND YOKE



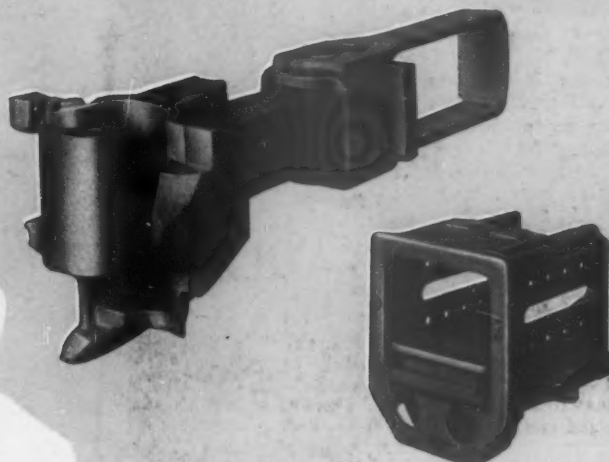
TYPE "H" TIGHTLOCK COUPLER
AND ATTACHMENTS



SWIVEL SHANK COUPLER AND YOKE



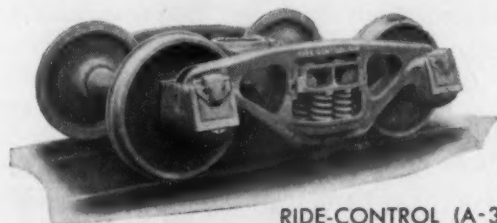
BUCKEYE CUSHION-RIDE
FREIGHT CAR TRUCK



TYPE "F" INTERLOCKING COUPLER
AND ATTACHMENTS



BUCKEYE SIX-WHEEL TRUCK



RIDE-CONTROL (A-3)
FREIGHT CAR TRUCK



BUCKEYE EIGHT-WHEEL TRUCK

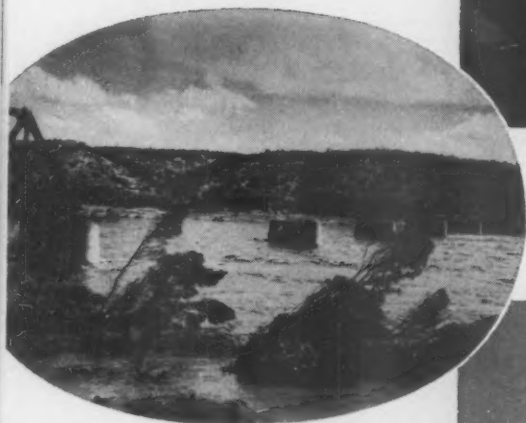
THE BUCKEYE STEEL CASTINGS COMPANY

New York, N. Y.

Columbus, Ohio

Chicago, Ill.

**When you're caught
with your bridges down-**



ABOVE: Washout showing what was left in the wake of the 1948 Devil's River flood. Four truss spans and seven beam spans were lost.

ONE 200' AND THREE 150' S.T. Thru-Truss Spans were fabricated and erected by American Bridge. Seven 17'-11" Beam Spans were fabricated by American Bridge and erected by the customer.



Customer—**Texas and New Orleans Railroad Company.**

Plans by **Texas and New Orleans Railroad Company.**

Design prepared by **American Bridge.**

Structural Steel fabricated and erected by **American Bridge: One 200' S.T. Thru-Truss Span; Three 150' S.T. Thru-Truss Spans.**

Fabricated by **American Bridge: Seven 17'-11" S.T. Beam Spans.**

THE Texas and New Orleans Railroad Company's Sunset Route crosses the troublesome Devil's River near Del Rio, Texas. During a flood several years ago, the river crested at a flood stage of more than 14 feet above the top of the piers and washed out eleven spans.

A temporary trestle suffered a similar fate when, a short time later, the river crested at approximately six feet above the piers.

American Bridge was awarded a contract to fabricate and erect the four thru-truss

spans, and to fabricate the seven beam spans for the new and permanent bridge.

Railroads know that they can depend on American Bridge to do the job right . . . for American Bridge has the engineering know-how, the equipment and the skilled personnel to handle any type of structural steel job with exacting precision, thoroughness, and speed . . . any time, anywhere.

Whether you are in trouble or not, it will pay you to call American Bridge in on your structural steel requirements.

AMERICAN BRIDGE DIVISION, UNITED STATES STEEL CORPORATION
GENERAL OFFICES: 525 WILLIAM PENN PLACE, PITTSBURGH, PA.

Contracting Offices in: AMBRIDGE • ATLANTA • BALTIMORE • BIRMINGHAM • BOSTON • CHICAGO
CINCINNATI • CLEVELAND • DALLAS • DENVER • DETROIT • DULUTH • ELMIRA • GARY • MEMPHIS
MINNEAPOLIS • NEW YORK • PHILADELPHIA • PITTSBURGH • PORTLAND, ORE. • ROANOKE • ST. LOUIS
SAN FRANCISCO • TRENTON UNITED STATES STEEL EXPORT COMPANY, NEW YORK

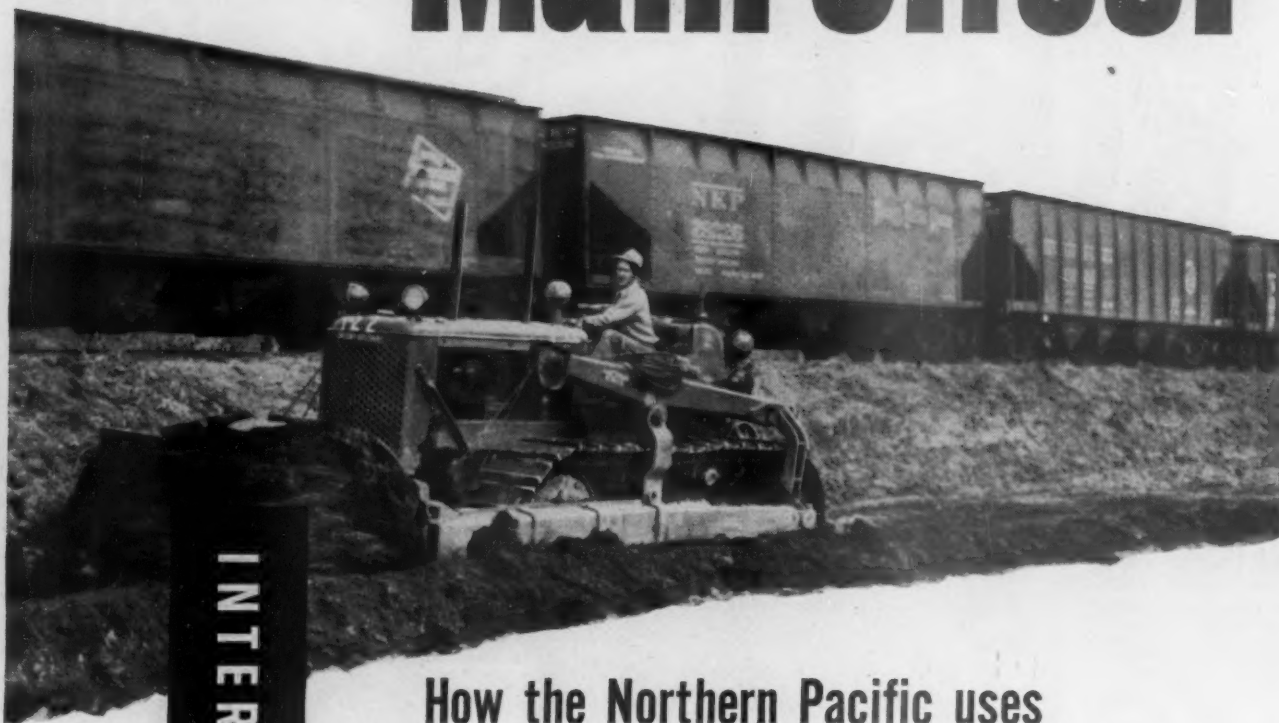


AMERICAN BRIDGE

UNITED STATES STEEL

Grading On "Main Street"

ONE-MAN OPERATION. Loaded with power, an International TD-18 makes light work of grading on the Lake Superior Division of the Northern Pacific.



INTERNATIONAL



POWER THAT PAYS

How the Northern Pacific uses International power on the "Main Street of the Northwest"

Heavier traffic riding the rails on the "Main Street of the Northwest" means more banking and grading on the Northern Pacific roadbed.

For example, on the Lake Superior Division, 25 miles northeast of Minneapolis, the Northern Pacific uses the International TD-18, pictured here, to speed up maintenance and prepare new roadbed for siding and passing tracks.

Moving clay and dirt along the right-of-way, the TD-18 moves it the right way—faster, easier and at lower cost.

Get the facts from your International Industrial Distributor. He'll show you how to make the most of your man-hours and maintenance dollars with International "*Power that Pays.*"

INTERNATIONAL HARVESTER COMPANY, CHICAGO 1, ILLINOIS

RUST-OLEUM

STOPS RUST!

Cut Your Maintenance Costs On Signalling Equipment, Rolling Stock, Bridges, Towers, Tanks, etc.

Here's the *practical, sensible* answer to your rust problems! Costly sandblasting or chemical pre-cleaning are not usually required . . . just wire-brush and scrape to remove rust scale and loose particles . . . then apply RUST-OLEUM by brush, dip, or spray over the rusted surface. Dries to a tough, elastic, rust-resisting film that lasts longer applied over rusted areas. So easy to use that one man often does the work of two . . . saves you time, labor, and money. Get the complete story from your RUST-OLEUM Rust Preventive Railroad Specialist today!

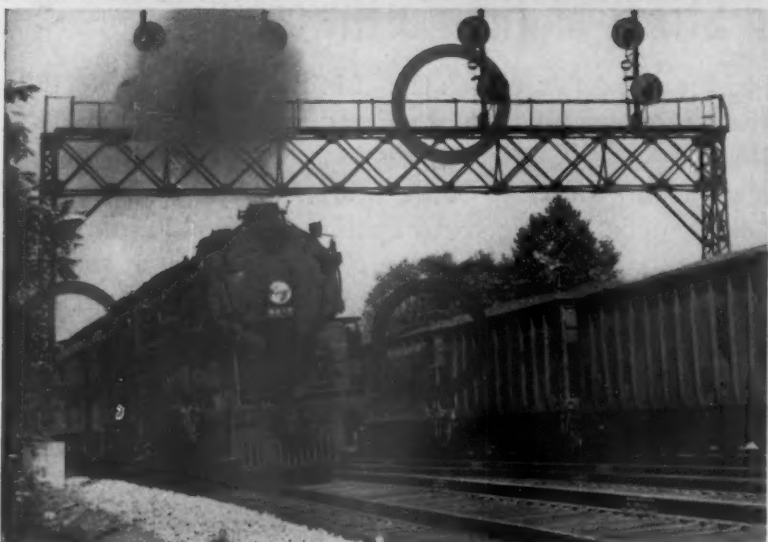
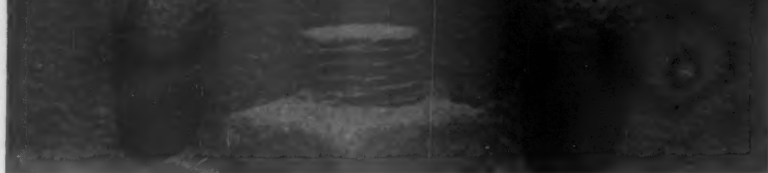
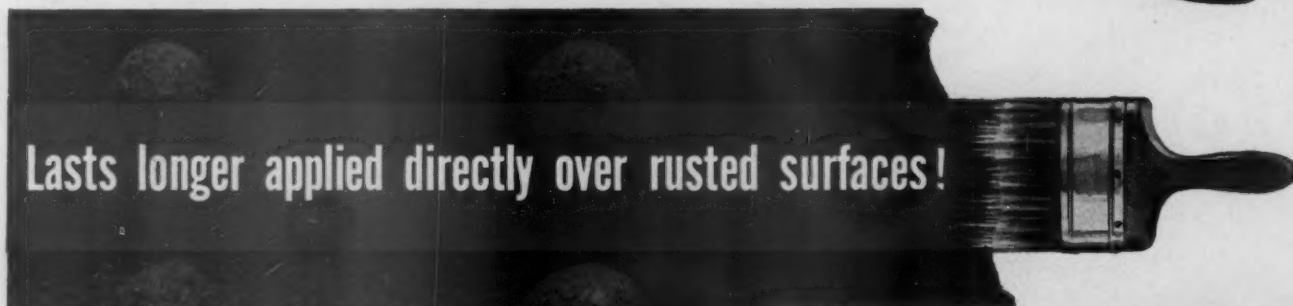
RUST-OLEUM CORPORATION

2595 Oakton Street, Evanston, Illinois

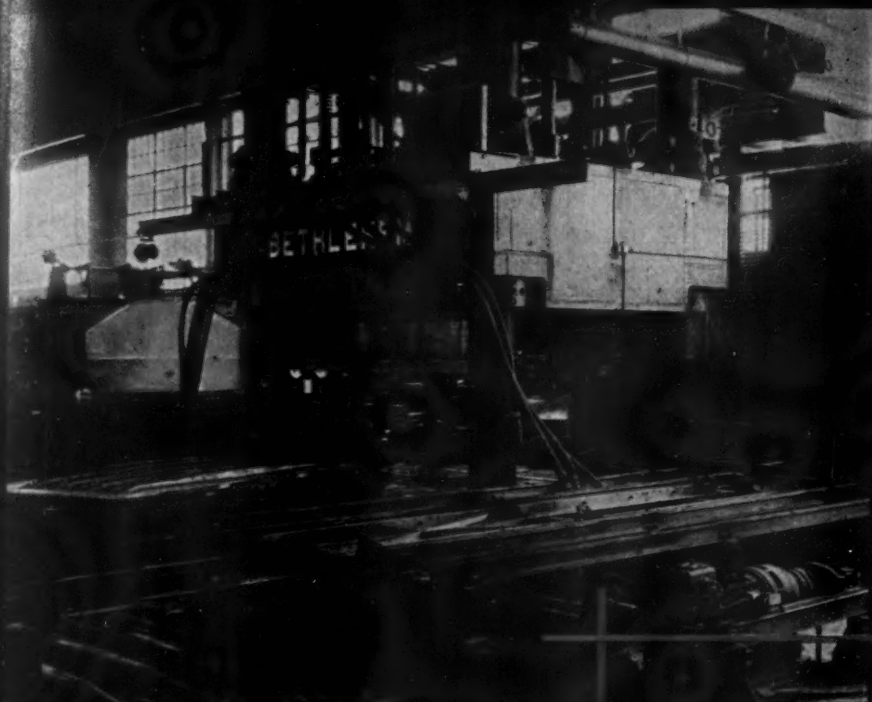


Available In All Colors, Aluminum and White

Lasts longer applied directly over rusted surfaces!

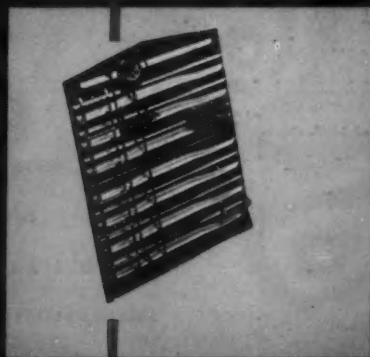


**Request Your FREE Copy of
The RUST-OLEUM Railroad
Catalog Now!**



the
END
result

OF YEARS OF
DEVELOPMENT IN
Standard's
RAILROAD
LABORATORY



THE IMPROVED
DREADNAUGHT END

The basic qualities which made Standard's original Steel End so successful have been modified and improved to produce today's Improved Dreadnaught Steel End.

Standard's recently consolidated plant in Hammond, Indiana is a production team, but more than that, it is a railroad laboratory, the object of which is to ceaselessly improve . . . to stay constantly one step ahead.

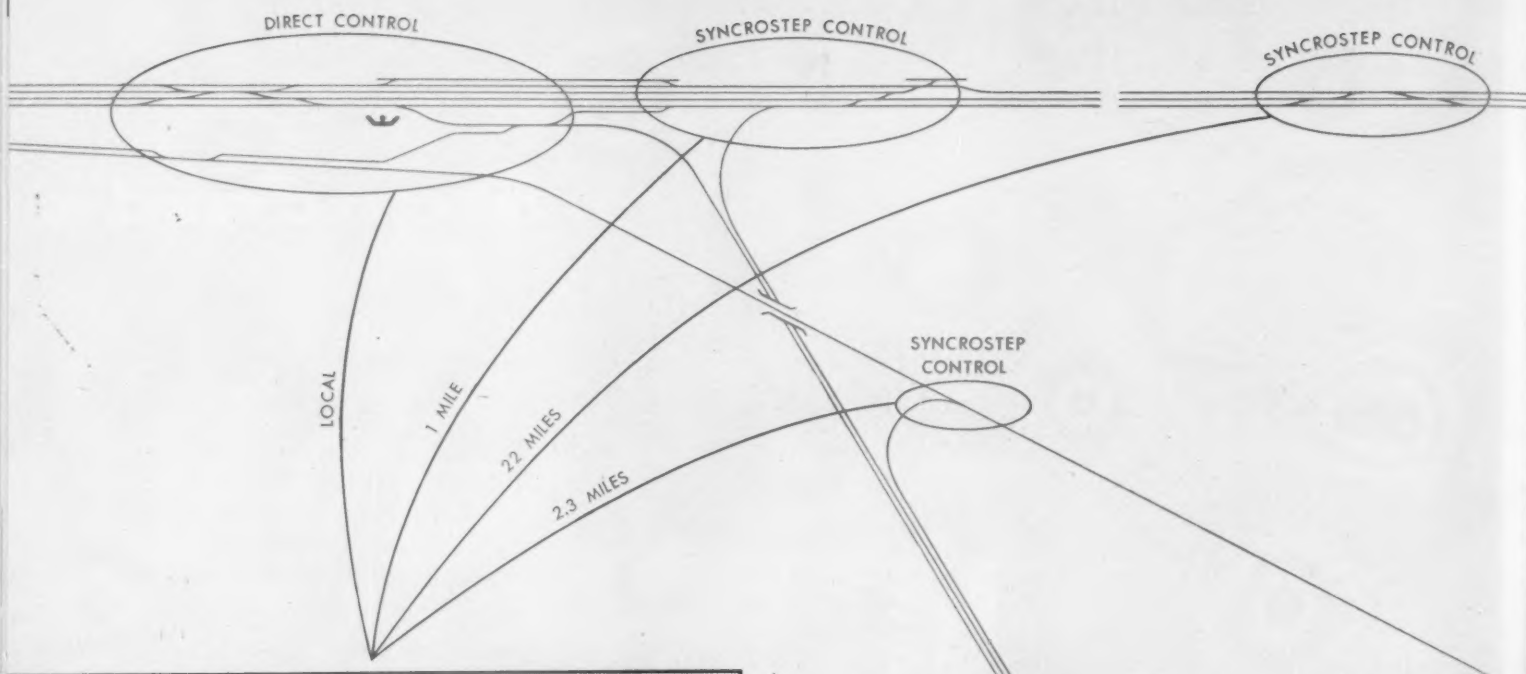
That's why the Improved Dreadnaught End you see today is the end result of past research—but it is not the end of Standard's job; the newly-installed 4,000-ton capacity press shown above represents the latest in a series of improvements Standard pledges to continue as its investment for and in railroading.



RAILWAY EQUIPMENT MANUFACTURING COMPANY
310 S. MICHIGAN AVENUE • CHICAGO • 247 PARK AVENUE • NEW YORK

Syncrostep REMOTE CONTROL

for economical interlocking consolidation



From one tower an eastern railroad now remotely controls 40 switch machines and 90 signals for handling over 100 trains per day, plus numerous switching moves.

G-R-S Syncrostep was chosen for the remote interlockings in this consolidation, because of its economy, operating speed, and simplicity. If you are planning interlocking consolidation, investigate Syncrostep. Ask your G-R-S district office for complete information.



GENERAL RAILWAY SIGNAL COMPANY

230 Park Av.

122 S. Mich. Av.

Main Office

611 Olive St.

NEW YORK 17

CHICAGO 3

ROCHESTER 2 N. Y.

ST. LOUIS 1

A. 2455



What's New in Products



TRAVELING BY ROAD from Ohio, this model was exhibited to railroad men at Chicago last week.

New "Gradall" Makes Its Debut

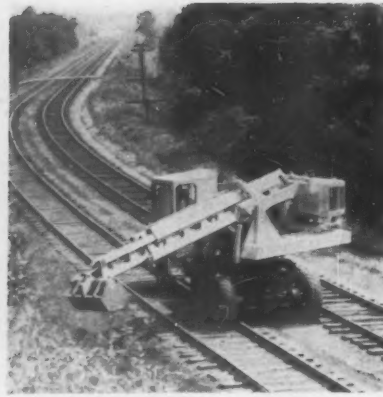
Excavator expressly for maintenance-of-way service introduced at Chicago show

A new "Gradall," designed especially for railroad maintenance-of-way application, was introduced to the railroad industry last week at the exhibit held at the Coliseum in Chicago concurrently with conventions of the Roadmasters and Bridge & Building associations.

The manufacturer, the Warner & Swasey Co., Cleveland, states that the carrier for the new machine has been designed "from the ground up" expressly to meet the needs of railroads for a versatile machine for maintenance

applications in either on- or off-track service.

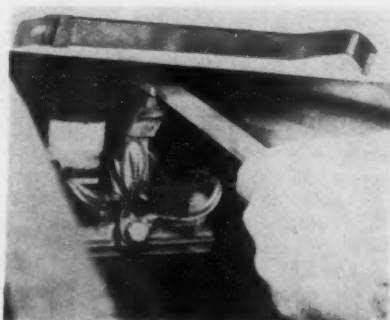
"Gradall" engineers designed a rigid 15-in. box-channel frame for the undercarriage of the machine and installed axles capable of carrying a gross vehicle weight of 60,000 lb. The new "Gradall" is equipped with large earth-moving tires and power steering, enabling it to climb across tracks and to straddle the rails. If need be, the machine may be driven over the highways from one division point to another.



IMPROVED GRADALL excavator can maneuver across the tracks and may be operated with the wheels straddling the rails.

A "6 x 6" drive provides power for all wheels of the machine. It has five speeds forward and one in reverse. Helical gears are used in the third, fourth and fifth speed ranges.

The manufacturer claims that the operational flexibility and high mobility of the new "Gradall" make it suited for simplifying, expediting and economizing many different maintenance-of-way jobs. The machine can be utilized in narrow cuts, on fills and inside tunnels and, when equipped with boom extension accessories, can "stretch" the normal reach of its telescoping, hydraulically controlled boom from 24 ft. to 36 ft., and increase its digging depth from 10 ft. to approximately 14 ft. •



Device for Changing Carbon Brushes

A spring-lifting device making it possible for diesel-electric locomotive maintenance men to change carbon brushes "from the pit" with relatively little effort and greater safety is a new product of General Electric Company, Schenectady, N.Y.

Made from hardened tool steel to

withstand wear, the lifter is a lever resembling a crowbar. A socket engages the tip of the lever to be lifted and keeps it from snapping down on the maintainer's fingers, should pressure on the handle be relaxed. Once the spring is lifted, the tool is securely engaged and the guideways prevent the spring from slipping.

The lifter's pry-push action makes it possible to lift springs where no brushes are contained in the holders. A long handle permits the free end of the tool to be swung around, giving free access to brush holders •

Gas-Shielded Welder

New welding equipment for the consumable-electrode gas-shielded welding process has been announced by the General Electric Company's Welding Department, Schenectady, N. Y. Called

Fillerarc, the apparatus includes a welding generator specifically designed for this process.

Electrode wire of aluminum, stainless steel, mild steel, copper, magnesium, and other alloys may be employed with argon or helium shielding gas. The process can be used in down-hand, vertical, or overhead positions to weld aluminum of any alloy in thicknesses from 1/32 to 3 in. and stainless steel from 1/16 to 1 in. It is also suitable for welding aluminum-bronze, nickel, and magnesium.

The generator is rated at 450 amp. continuously and has a rising volt-amp. characteristic. As current is produced by the welder, the voltage generated increases, making the process self-regulating.

Designed to give constant arc length, the new welder produces any current required up to its full rating. Thus, it is prepared for any wire feeding speed and will supply the current



THE WELDING EQUIPMENT consists of three main components: (left to right) the wire drive unit, the welding gun, and a special self-regulating welder.

necessary to melt off the wire at exactly the rate it is fed. Machine settings are for arc length only and no current calibrations appear on the dial.

Once arc length is set, the operator can change wire feed, (the only other variable to be controlled) even while welding, without the necessity of re-adjusting the welder.

The Fillerarc welder's open-circuit voltage, between 10 and 30 volts, will not sustain long arcs, reducing the possibility of burn-back.

The Fillerarc gun contains knurled feed rolls for pulling the electrode wire from a spool mounted in the wire drive unit, a trigger to control wire feed and gas flow, and an electrical contact tip. It is water cooled with a rating of 400 amp. continuous d.c.

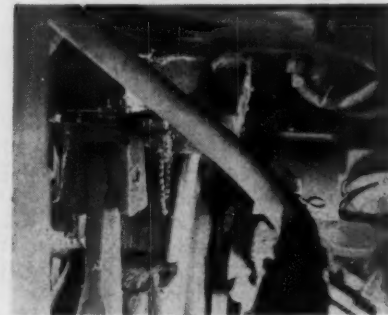
The third component of the equipment is the wire drive unit. Mounted on a portable carriage, the unit contains a Thy-mo-trol wire feed drive motor control which powers the knurled feed rolls in the welding gun through a (Continued on page 75)



"SYSTEM LUBRICATION" produces a hard film of graphite lubricant on the pressure side of the rail without spreading to the rail top.



THE ENDLESS CHAIN automatically feeds the graphited lubricant to the wheel flange.



THE LUBRICATOR can be filled for a 400-500 mile trip in a minute, cleaned in 15 minutes at quarterly inspection.

Rail and Flange Lubrication

New system automatically lubricates the contact surface between rail and wheel flange without getting lubricant on the top of rail or tread of wheel

Train resistance around curves and through switches and crossovers, along with the resultant rail and wheel flange wear, may be appreciably reduced in the future by a new type of system lubrication made possible by the development of a fully automatic mechanical flange lubricator. The term "system lubrication" was chosen to describe the arrangement because it lubricates the wheel flanges from the locomotive on back through the train as well as the pressure side of the rails. It does this without getting lubricant on the surface of the track or the tread of the wheel.

The lubricator deposits on the flange of the wheel a heavily graphited grease which in turn is rubbed into the pres-

sure side of the rail. Four lubricators are used per locomotive unit. A set of two is used at each end of a switcher, one on either side. On road locomotives, two are mounted on the lead wheels of each truck.

The deposit of the graphited lubricant is made by an endless roller chain assembly which runs through a grease reservoir. The chain is adjusted to prevent getting the lubricant on the tread of the wheel or the surface of the track. It is driven by a friction wheel from the locomotive wheel through double reduction gearing. The deposit of the lubricant is made by the lateral movement of the wheel and the sway of the chain.

The first system of any size to use

these lubricators was the Tacoma Municipal Belt line in Tacoma, Wash., which operates five locomotives. This line found that graphite from the locomotive lubricators extended back to flanges throughout the train which resulted in properly lubricated frogs, switch points, crossovers, etc., giving the entire system a complete lubrication job without slippage caused by greasy rail surfaces. Cost of the graphite lubricant averages approximately 22 cents per day per locomotive, while maintenance records disclose that flange life was increased several times on locomotives equipped with these lubricators and track wear reduced.

The lubricator can be filled in about a minute with enough graphited grease for 400 to 500 miles of locomotive operation. The only maintenance normally required is cleaning, which can be done in 15 minutes during monthly or quarterly inspection.

These automatic flange lubricators are made by the Rail & Flange Lubricator Co., 2784 N. W. Thurman street, Portland 10, Ore. •



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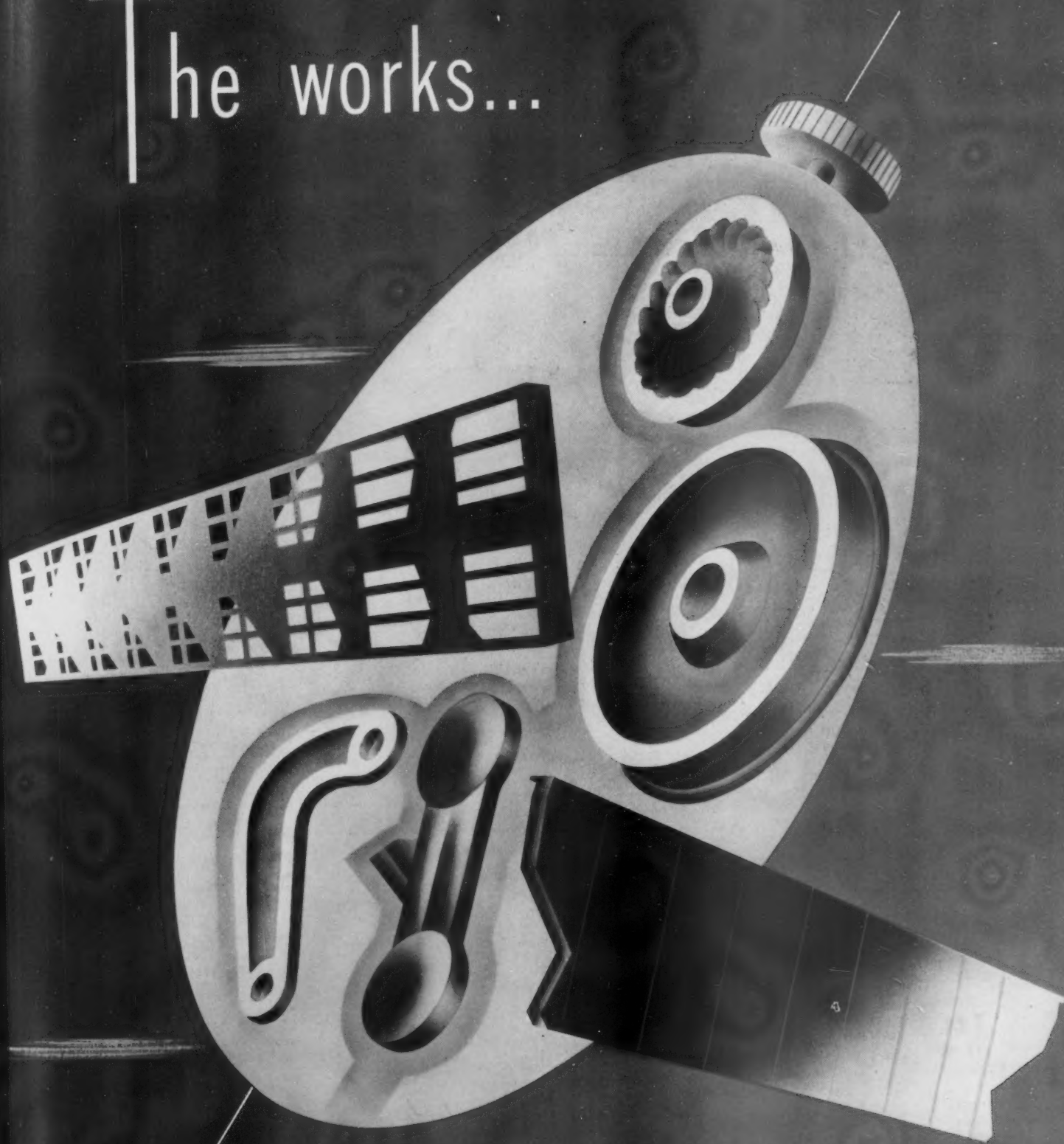
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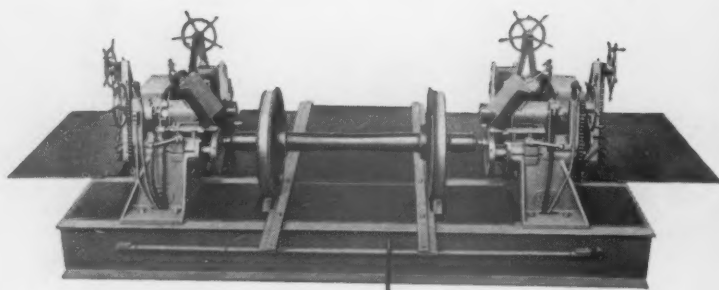


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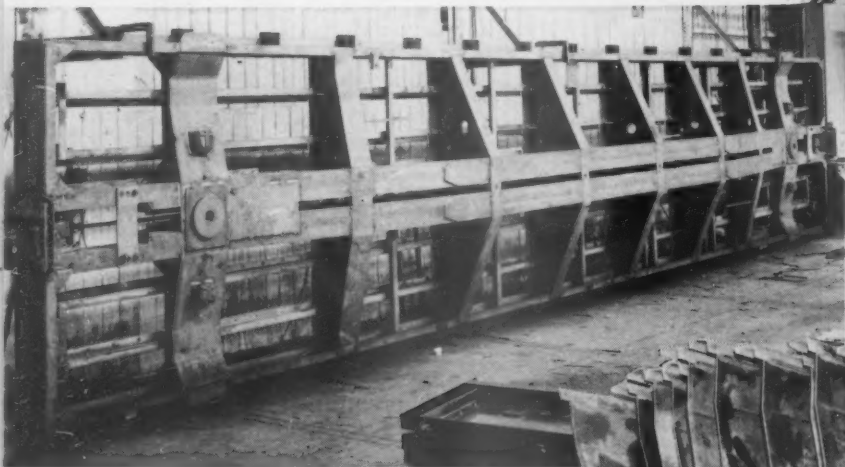
FOR RAILROAD CAR REPAIR AND M



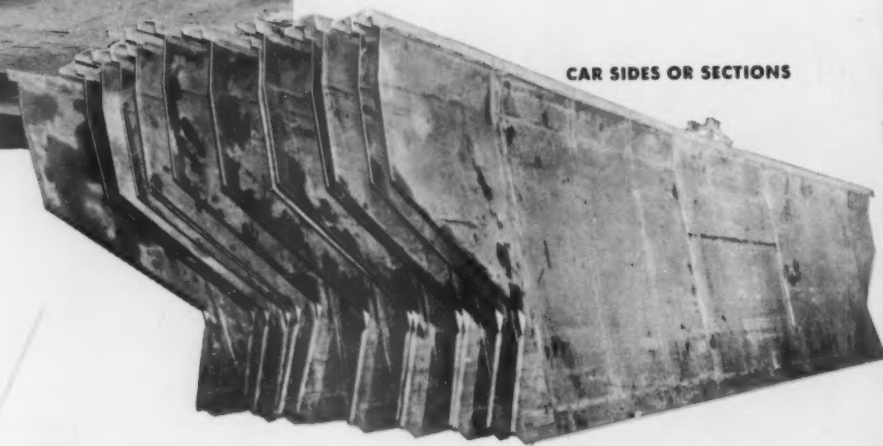
WHEEL TREAD GRINDER



CHILLED TREAD CAR WHEELS



COMPLETE UNDERFRAMES



CAR SIDES OR SECTIONS

a.c.f.

CAR BUILDERS TO AMERICA'S RAI

MAINTENANCE

UNDERFRAME AND COMPONENTS as complete units or as separate components, including draft gear assemblies, bolsters, draft gear followers and strikers, cross ties, etc.

COMPLETE SIDES for hopper cars, box cars etc., either welded or riveted.

INDIVIDUAL CAR PARTS of all types such as: brake hangers, levers, masts, rods, shoes, keys, center plates, couplers, yokes, grab irons, journal wedges, pins, etc.

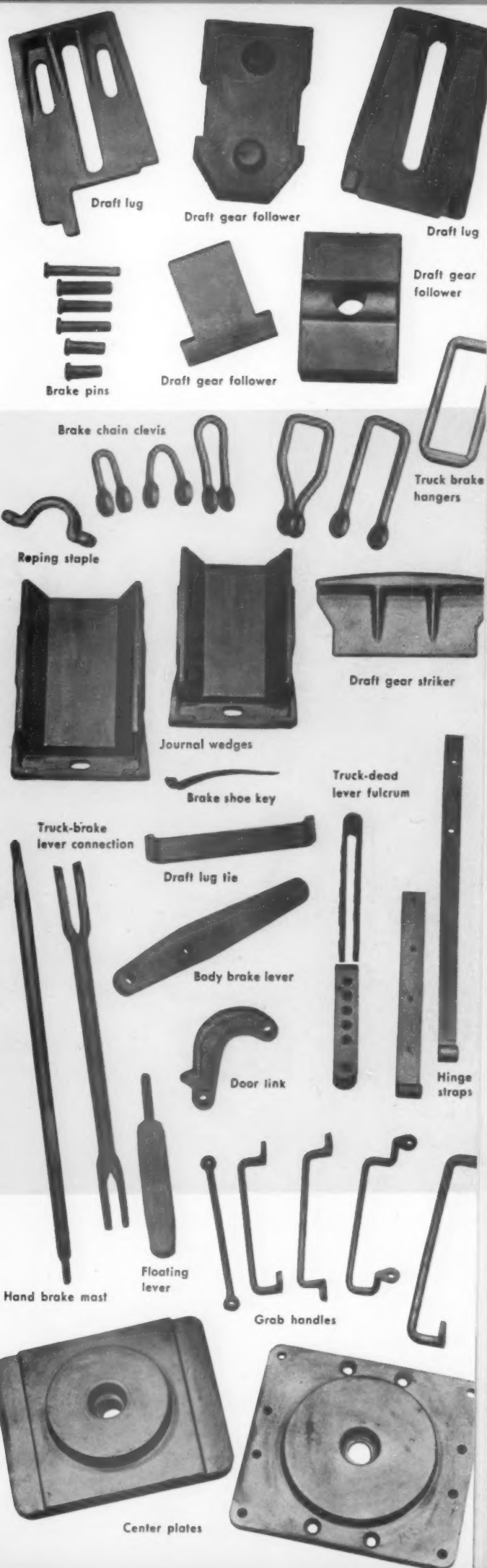
RAILWAY POST OFFICE FIXTURES complete units of various types, or any and all component parts. (A complete catalog of Standard Fixtures is available.)

CHILLED TREAD CAR WHEELS—single or double-flanged wheels from 6" to 36" diameter for press-angle fit. (Ask for a complete list of sizes and types.)

A.C.F. HIGH-SPEED WHEEL TREAD GRINDER controls concentricity to axle in wheel mounting, removes slid flats and other service defects in your own car shops. Will service wheels from 24" to 45" diameter. (A folder of complete specifications showing detailed operating advantages is available on request.)



R.P.O. FIXTURES





a word to the wise...

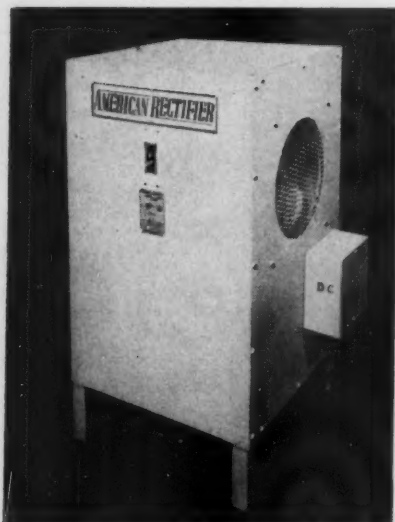
Knowing *in advance* exactly how A.C.F. can help you—will go a long way toward solving troublesome replacement and repair problems. Solve them, moreover, with efficiency, economy and dispatch. Your A.C.F. Representative has complete information. Ask him today. American Car and Foundry Company, New York, Chicago, St. Louis, Cleveland, Philadelphia, Washington, San Francisco.

CAR BUILDERS TO AMERICA'S RAILROADS

A.C.F.

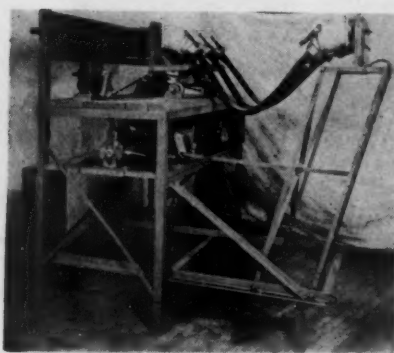
(Continued from page 70)

flexible shaft. It incorporates a voltmeter for indicating wire feed speed in inches per minute as well as arc voltage, a gas solenoid valve, control relays, and spindle for electrode wire •



Rectifiers for D.C. Power

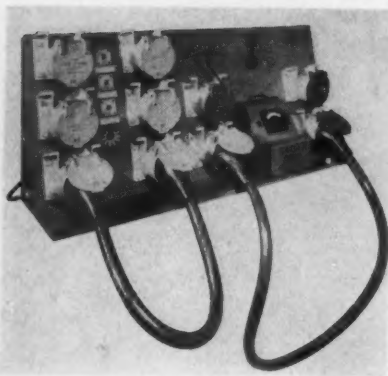
Selenium-type rectifiers in standard units ranging in size from 3 to 5 kw. are now being supplied by the American Rectifier Corporation, New York. They are made for 50 to 10,000-volt d.c. output with either fixed or variable voltage, and for operation from any a.c. voltage or frequency. Rectifiers in sizes up to 1,000 kw. are engineered by the manufacturer to meet specific requirements. The unit shown is rated 20 kw. Ventilation in the larger units is supplied by motor-driven fans •



Testing Equipment for Locomotive Connectors

Two testing devices for diesel-electric locomotive control circuit jumpers have been developed by the Pyle-National Company, Chicago. One serves to make high-potential and continuity tests and the other life tests.

The hi-potential and continuity tester is divided into two sections. On the

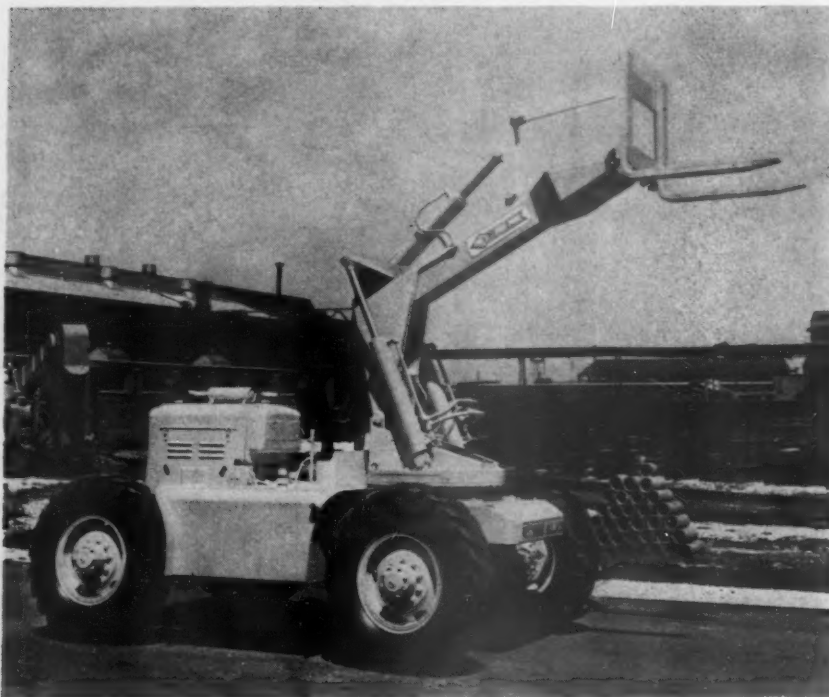


left, there are three pairs of receptacles, respectively for 16-, 21-, and 27-pole plugs. The jumper to be tested is inserted between the two receptacles having the proper number of contacts and each conductor is tested separately for continuity by means of the selector switch, upper right. Six-volt, a.c. power is used for this purpose and a red light indicates a completed circuit.

The right hand portion of the tester is used for high-potential tests. There

are three receptacles, respectively for 16-, 21-, and 27-pole plugs, and a dummy receptacle without contacts for the other end of the jumper. For testing, the jumper is plugged between the receptacle having the correct number of contacts and the dummy receptacle. This removes the possibility of someone coming in contact with the hot end of the jumper. The selector is used to test each connector and voltage is applied by pressing a button which must be held to be closed. The hi-potential machine used has two ranges, 0 to 3,000 volts and 0 to 6,000 volts.

The life tester provides a means of subjecting jumpers to the strains they receive in service, but in exaggerated form. One end of each of the jumpers under test is stationary and the other is moved by a motor-driven mechanism which gives it a horizontal movement of 10 in. at 38 cycles per min., a vertical movement of 2 in. at 150 cycles per min. and a lateral movement of 18 in. at 24 cycles per min. The manufacturer states that 200 hours of test on this machine are equivalent to 25 years of service in the field •



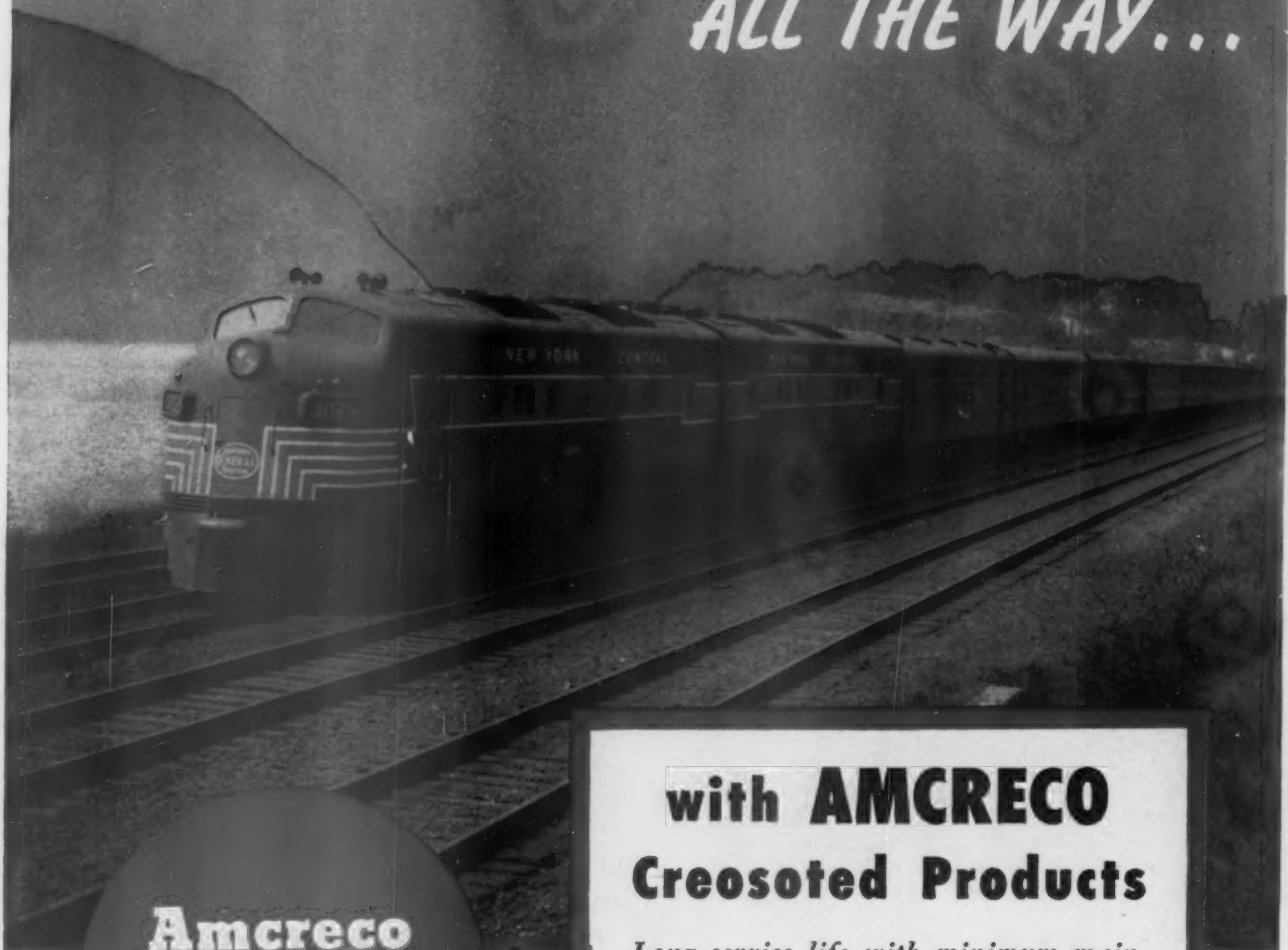
Swing Loader

A new machine, the Model 422 Speed Swing Loader, has been developed by Pettibone Mulliken Corporation, Chicago. The unit is essentially a heavy truck chassis, mounted on four large pneumatic tires, which supports a hydraulically operated boom. Various boom attachments are available to enable the machine to serve as a truck cleaner, a bucket loader, a fork lift, a tote crane, and as a snow remover. It is powered by a gasoline engine rated at 56 hp. at 2,000 r.p.m., has a four-wheel drive,

and is available with either two or four-wheel steering.

It has an adjustable seat, hydraulic booster steering, a parking brake, and a hand throttle. According to the manufacturer, when equipped with a bucket, it will handle from $\frac{3}{4}$ to 1 cu. yd., raising the load to its maximum dumping height of 9 ft. 8 in. in 7 sec. The attachment can be swung through 180 deg. and can be tilted up 30 deg. The maximum static load is 6,000 lb. and it weighs approximately 7 tons. It has an overall width of 8 ft. •

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ALL THE WAY...**



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Products**

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Adzed and Bored Cross Ties
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Long service life with minimum maintenance—that's how Amcreco quality products reduce maintenance-of-way costs to the lowest possible level. Amcreco cross ties, bridge timbers, poles and plank last longer with greater strength because they are pressure treated in creosote by experienced Amcreco methods.

Start now and lower your maintenance-of-way costs by taking advantage of our nearly half a century of wood treating experience. Call your nearby Amcreco sales office for positive information on maintenance cost reduction.

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18 FIELD SALES OFFICES TO SERVE YOU

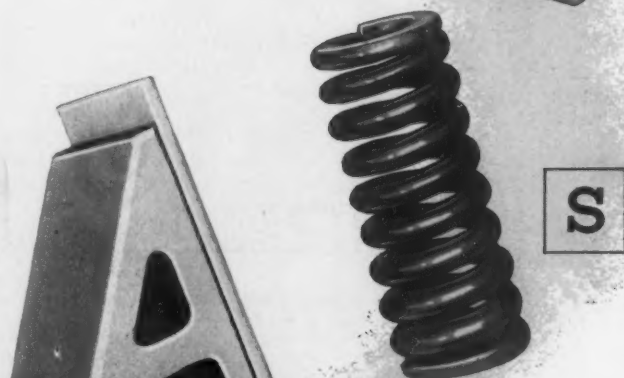
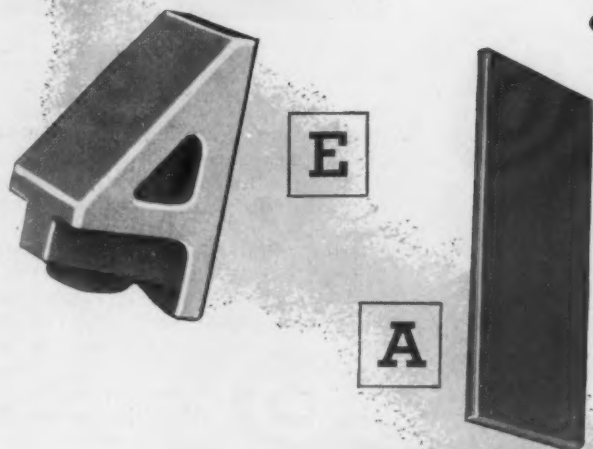
EASY does it!

ASSEMBLING—DISMANTLING—SERVICING

One of the features of Barber Stabilized Trucks that users seem to like best is the simplicity, speed and ease with which they are assembled, dismantled and serviced.

One reason for this time-and-trouble-saving is that Barber Stabilizer parts are freed when the bolster is raised off the springs. Another is that Barber, in pioneering these VERY EASY-RIDING TRUCKS, employed the smallest possible number of parts, each of which has exceptional strength and durability.

These facts, we believe explain why more than 330,000 Barber Stabilized Trucks have been specified up to this time.



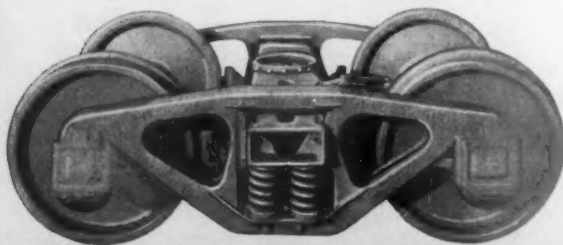
E Special Heat-Treated Alloy-Iron friction casting having 35 inches of friction-bearing surface.

A Spring-steel wear plate securely bolted or welded to the column.

S Friction-casting-supporting side-spring having a minimum $\frac{3}{4}$ " initial compression.

Y Barber Side Springs carry part of the load, thus increasing bolster spring capacity and reducing net cost.

BARBER STABILIZED TRUCKS



STANDARD

CAR TRUCK COMPANY

332 SOUTH MICHIGAN AVENUE, CHICAGO, ILLINOIS

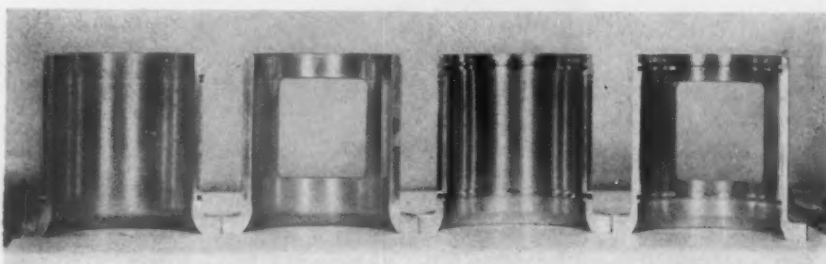


Improved Excavator

A completely re-engineered model of the tractor-powered, hydraulic Pippin excavator has been announced by Pippin Construction Equipment, Inc., White River Junction, Vt. The new model, designated the De Luxe Model WF-104, is said to be more sturdy and powerful than its predecessors. It attaches to light tractors, such as Ford or Ferguson, and is being adapted to other makes of tractors. The builder states that it will excavate over 10 ft. deep and will lift to a height of 12 ft. for truck loading. Its wider swing

(12.5 ft. from center) allows the piling of dirt farther from excavation.

Besides heavier construction throughout, the power of the bucket is increased through hydraulics and leverage. The excavator is rigidly supported by its two hydraulic stabilizers, which relieves the tractor of the working stresses and assures digging of plumb ditches on uneven ground or on slopes up to 15 deg. A hydraulic tank of greater capacity provides better oil cooling under extreme working conditions. A variety of buckets, back-hoes and shovels increases the excavator's usefulness.

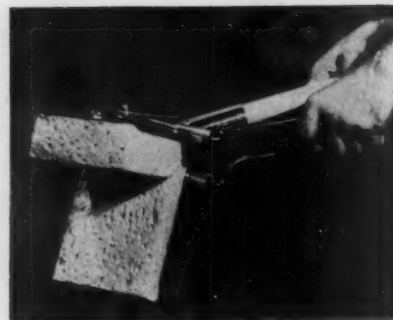


Traction Motor Suspension Bearing

The General Electric Company, Schenectady, N.Y., has developed a traction motor suspension bearing which it asserts will enable more than 90 per cent of the locomotives equipped with the bearing to operate between monthly inspections without addition of oil to the axle caps. The bearing is designed on the principle that the correct approach to better oil mileage is not to supply a minimum of oil to the journal, but rather to supply as much as possible and return the ex-

cess to the cap. Oil return grooves in the lining are the crux of the new bearing.

Extensive field testing was carried on for 18 months in developing the "oil return" type bearing. Oil level versus mileage was measured on a total of 26 locomotives on 11 different railroads with the result, according to the manufacturer, that the new bearing consistently showed that in any type of service locomotives so equipped can run three times longer between oilings than with older type bearings. The design is adaptable to modifying old bearing linings.



New Sponge Mop Has Built-in Wringer

A new commercial and industrial sponge mop featuring a patented self-wringing device for faster, easier and more effective cleaning is being introduced by Flexy, Inc., of New Holstein, Wis.

Called "Flexi-King," the mop comes in two sizes: one with an 11-in. cellulose sponge head, and a heavy-duty model with a 14-in. head. Both models have a full 10-year guarantee on all metal parts.

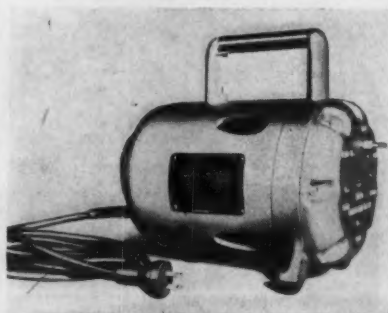
Self-wringing is done by a flexible metal head to which the sponge is fastened. Operation of a wringer control on the handle literally folds the sponge dry. Both models can be used with an ordinary sized pail: even the 14-in. model will fit easily when partly folded.

The sponge is secured to the metal head by means of four thumb nuts, so the sponges can be changed quickly for different kinds of work.

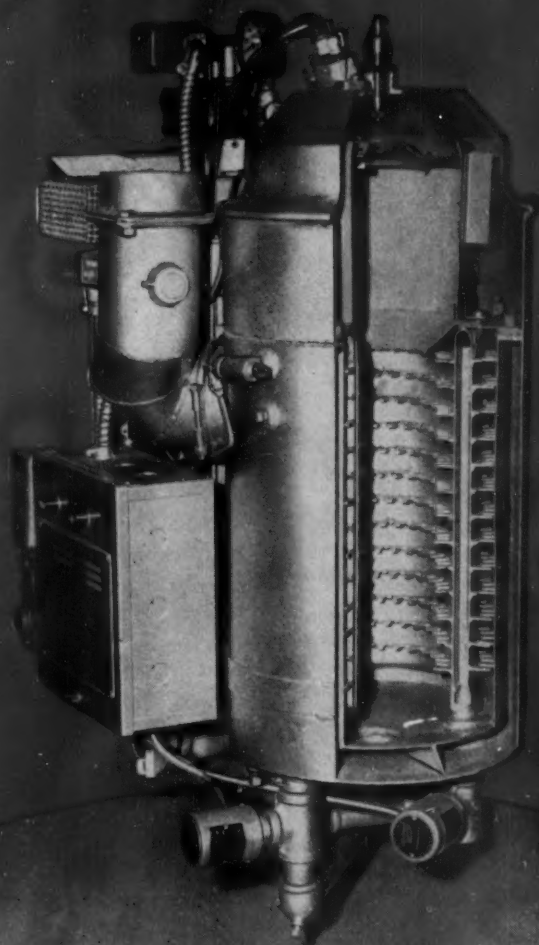
Tachometer Tester

A tachometer tester, Sweeney Model 1100, features 7 output speed shafts of 300, 500, 600, 720, 800, 1,000 and 1,800 r.p.m., for testing most types of portable tachometers. A built-in reversing switch permits clockwise or counterclockwise rotation of the shafts for testing tachometers in either direction. For a comparative reading, the drive shaft of the tachometer is inserted into the desired speed shaft on the tester. Driven by a synchronous motor, the tester has the same accuracy as an electric clock. It operates on 115 volts, 60 cycles.

The unit weighs 23 lb. It is an improved version of an earlier model. It is made by B. K. Sweeney Manufacturing Company, Denver 17, Colo.



A **3**-way Money Saver for Every Diesel **VAPOR** *Automatic* HOT WATER HEATER



WRITE FOR NEW BULLETIN 584—Get full information on this compact "push-button" protection—the Vapor No. 4915 Automatic Hot Water Heater.

1

Higher Efficiency

Keeps coolant water at the temperature needed for maximum operating economy whenever load hauled is too light to maintain highest thermal efficiency.

2

Lower Maintenance

Eliminates costly delays and reduces maintenance by always holding coolant at operating temperature, prevents needless expansion and shrinkage; makes "idling" warmup unnecessary.

3

Standby Protection

Holds block-temperature ready-for-the-road during standbys between runs, for week-end layovers, or longer—protects expensive Diesel equipment outdoors, or in non-heated buildings.

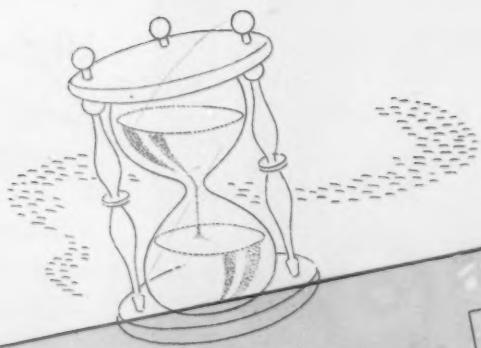
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KERITE CABLE-GRAM



QUALITY IS THE PRODUCT OF
INTEGRITY. ALMOST 100 YEARS
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TO THE HIGHEST STANDARDS OF
MANUFACTURE HAS MADE QUAL-
ITY AN INHERENT COMPONENT OF
KERITE INSULATED CABLE.
ITS DEPENDABLE PERFORMANCE
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THE ULTIMATE TEST OF ENDURING
QUALITY. ITS PROPERTIES,
STILL UNRIVALED TODAY, MERIT
CONTINUED USER CONFIDENCE.

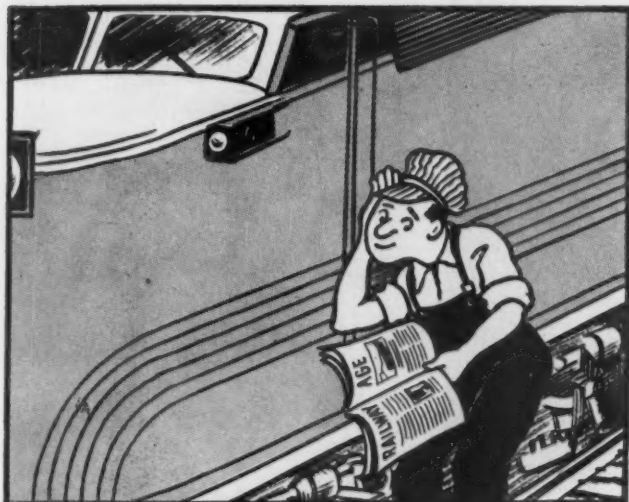
THE VALUE AND SERVICE LIFE OF A PRODUCT CAN BE NO GREATER
THAN THE INTEGRITY AND CRAFTSMANSHIP OF ITS MAKER.



1854 KERITE FACTORY 1864

KERITE CABLE

THE KERITE COMPANY—30 Church St., New York 7, N. Y.
Offices also at 122 S. Michigan Ave., Chicago; 582 Market St., San Francisco;
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*To know what is new
And find out who's who
In railroading now days
The rage
Be one of the clique
That's making trains tick,
By reading your own Railway Age*

The *Railway Age* reader* who submitted the above limerick is not only interested in keeping up with latest railway developments, but also enjoys keeping up with the careers of his railroad friends.

That's not surprising, for the personnel columns of *Railway Age* rate a high degree of readership.

There may be a lesson here: Most of those railroaders mentioned as on their way up to positions of greater responsibility in railroading are regular readers of *their own personal copies* of *Railway Age*.

It stands to reason that when you are well informed on *all* phases of railroading, the doors to opportunity open widest. And *Railway Age* is recognized by railway men everywhere as the most authoritative news source available today!

Join the ranks of railroad's "Who's Who" who are reading their own personal copies of *Railway Age* each week. Enter your subscription order today!

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*To Mr. T. R. Nicely of the Erie RR goes \$5 for his limerick. Another "river" awaits the next one submitting a limerick we use.

Benchmarks and Yardsticks

YOUR REPORTER recently had the privilege of talking to a chief railway executive of long and successful experience in the selection and training of railway officers for higher responsibilities. His method of selection would have to be described as a complex art, rather than an exact science which could be readily set down in a specific formula for easy application.

Two characteristics that this chooser of men looks for are good judgment and "essential" honesty. Asked to explain what kind of honesty he considered "essential," our informant said (in substance):

"**Most people**, and especially the ladies, adorn themselves for public appearance in somewhat more attractive form than unaided nature intended. This is not being honest in the strictest sense of the term but nobody is harmfully deceived. Essential honesty consists in being honest about things that really count, and where other people have a right to expect or hope for it."

On the question of good judgment, our informant did not disclose all the ways he had discovered of detecting it, but he indicated that there are some tests for it—and rather simple ones. Almost anyone, with observation and reflection, could develop some such tests for himself. For example, does a man plan his work so his more essential duties get done first, or are the important jobs neglected while the less important ones are scrupulously performed?

Another point this executive emphasized was that newly promoted officers need to realize that their promotion adds immediate weight to what they say. For example, it may not be too harmful for an employee in the ranks to express rather careless opinions about his community or local political leaders or whatever—since nobody is likely to give undue weight to his expressions anyhow. Immediately such a man is elevated to the rank of supervisor or officer, however, what he says begins to be taken much more seriously than before. Talk of a kind that was relatively harmless on September 30 may become very dangerous indeed on October 1, when the talker steps one rung up the ladder.

This executive, of course, has the same unexalted opinion of a "swelled head" that everybody else has. But he does deeply believe that an officer needs to develop a character of behavior which will give him a genuine dignity befitting his responsibilities. "If I saw a half-dozen men, none of whom I knew, coming down the platform," he said, "I'd want to have no trouble in picking out which man in the group was the superintendent."

J.G.L.

A line of exceptional versatility, unequalled in the heavy duty field, with a virtually unlimited number of assembly combinations for varied applications. Offers a selection of 1, 2, 3, 4, 6 and 8 pole contact units which are interchangeable and reversible in any single set of housings. Many types of housings available of pressed steel with automatic lock and of cast metal threaded for watertight gasket seal. Multi-Circuit housings with 2, 3 and 4 contact units available for combinations up to 32 poles. Ratings 15 and 20 amperes, 250 volts DC, 460 volts AC—circuit breaking. Pressed steel fusible and fuseless plugs measure only 1 1/4" outside diameter.

General Purpose Series Available with cast metal housings in many types for circuit breaking and disconnect service. 30 amperes, 125 volts DC, 250 volt AC—1, 2, 3, 4, 5 and 6 pole. 60 amperes, 250 and 600 volts—3, 4 and 5 pole. 100 ampere, 250 and 600 volts—2, 3 and 4 pole. Also many special types, fusible and fuseless, for varied applications.

THE PYLE-NATIONAL COMPANY

CONDUIT FITTINGS • FLOODLIGHTS • TURBO-GENERATORS • GYRALITES • MULTI-VENT AIR DISTRIBUTION



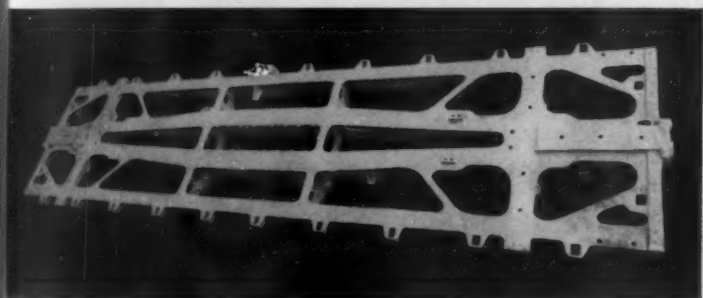
In Service!



New Haven Harlem River Yards showing highway trailers and "Piggy-Back" flat cars equipped with Commonwealth Underframes.

300 "Piggy-Back" Flat Cars

for the New Haven
Feature
COMMONWEALTH
Underframes



Commonwealth Cast Steel Underframe for New Haven "Piggy-Back" Flat Cars.



"Piggy-Back" Flat Car carrying highway trailer.

In 1950, the New York, New Haven & Hartford Railroad ordered 200 highway trailer carrying flat cars equipped with Commonwealth One-Piece Cast Steel Underframes. Two years later, an additional 100 cars were ordered — proof of the completely satisfactory performance of the original order.

The Commonwealth Underframes for these cars, which may also be used in general flat car service, provide many advantages including exceptional strength protecting trailer and lading, light weight, unusually long service life and lowest maintenance cost.

Commonwealth One-Piece Cast Steel Underframes assure highest availability and lowest operating cost.



GENERAL STEEL CASTINGS

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One of the outstanding achievements in transportation history is the expert handling of big city rush hour crowds. Operating on one minute headways and even less, electrical railroads and subways perform daily miracles in helping the nation get to and from work on time.

Maintaining such schedules demands electrical equipment of utmost reliability. Okonite-Okoprene, for example, is widely used for power control and motor leads, as shown in the truck photo above.

Cables so located are subjected to constant vibration and abrasion, as well as continual

exposure to oil, dirt, dust and moisture. Okonite-Okoprene combats such elements with its Okoprene protective covering, a tough neoprene compound which repels all such attacks.

Beneath this rugged sheath is the Okonite insulation, the natural rubber insulation which has been proved on railroads—in a variety of uses—for nearly three-quarters of a century.

Using Okonite-Okoprene cables for all critical circuits is the best cable economy you can practice. Its long, dependable service is the reason why railroad men specify it again and again. The Okonite Company, Passaic, N. J.

1440



The best cable is your best policy

OKONITE



insulated wires and cables

Uncle Sam Hits The Railroads Again

The decision of the Post Office Department to move first-class mail by air on the New York-Chicago and Washington-Chicago routes evidences further deterioration in government treatment of the railroads. Such treatment must soon be corrected or the hope that the railroad industry can ever expect to thrive as self-supporting private enterprise will have to be abandoned.

The economic cost of moving mail between these cities by air could not be less and must be more than for comparable movement by rail. The reason the Post Office feels that it can afford to make the movement by air lies, presumably, in the kind of *rates* the Post Office pays the railroads—rates which are based on the average costs of all mail movement by rail. When charges are made on such a basis of average costs, rather than on costs of specific movements, some movements are bound to be extraordinarily expensive to the shipper, while other movements are going to be on a bargain level. When a carrier has rates set on such a basis, it immediately becomes vulnerable to piecemeal competition—which can and does come along and underbid for the remunerative part of the business, while completely abstaining from the unprofitable part. As so ably expressed by Professor Gilbert Walker in an article quoted heretofore in this space:

"The principle of arriving at the rate by averaging the costs might have served the interests of the public in a market in which . . . transport was monopolized . . . but it will not and it cannot work in a transport market in which the transporter, on whom is imposed the obligation of charging a rate computed from the average of all costs, is in any way exposed to competition from other transporters not so bound."

The Weakness of the Average

The federal government—through the Interstate Commerce Act, as enforced by the Interstate Commerce Commission—prescribes or strictly controls rates charged by the railroads, including those charged for the movement of the mails. These rates, for the most part, are based traditionally on an averaging of costs. Under the application of this method of pricing the railroads have been losing more and more of the traffic

of private shippers—that is, traffic on which railroad rates have been substantially higher than actual costs. Meantime, a constantly increasing proportion of total traffic left on the rails has been that which yields only a narrow margin of profit, if any.

The shipping community—including the federal government in its capacity as a shipper—cannot expect the railroads to thrive as self-financing enterprise and to continue to give satisfactory service, if they are to be limited only to that traffic which is so profitless that no other carrier will touch it. The railroads themselves—including those whose operations are still relatively profitable—cannot look to the future with confidence with the continuation of a method of pricing which has resulted in growing diversion from them of traffic which, if actual costs were controlling, would continue to move by rail. The sooner this fact is recognized and made generally known, the better it will be for all concerned.

The Post Office some time ago began to move a lot of mail by truck. Much of this traffic undoubtedly *should* have been diverted to truck movement. That is to say, where the actual economic cost (labor, fuel, maintenance and use of capital) is lower for movement by highway than for similar movement by rail, then the traffic ought to be trucked. Conversely, if the comparable costs are lower by rail than by highway or air, then the traffic ought to move by rail.

"Expense" vs. "Cost"

However, it is the *expense*—i.e., rates or charges—and not actual economic costs, which govern the routing of traffic; and, under competition, if rates on specific movements bear little relationship to actual costs of these specific movements, then a lot of traffic is going to get routed via the high-cost agency.

The shipping community—including government as a shipper—cannot long continue to enjoy low average rates from the railroads if the only traffic to be left on the rails is that on which charges are below the average. The shipping community is being denied the "inherent advantages" of the most economical method of transportation for a constantly growing ratio of the total traffic where the "inherent advantage" lies with the railroads.

From the public announcement by the Post Office about this diversion of "regular" mail to air movement, it appears that the air lines are going to take this mail on a "fill-out," or "by-

product," basis. If the railroads should be permitted to apply this method of pricing to mail or to any other traffic whatever, they could probably underprice any other form of transportation. The air lines will continue to move the regular airmail at rates far above those they are offering for this business they are diverting away from the railroads. It is as if the railroads were to be permitted—while continuing to make existing charges averaging 1.5 cents per ton-mile for traffic now moving by rail—to drop as low as 0.5 cent per ton-mile or even lower on traffic to be diverted from other forms of transportation.

If there is any mail left over after the planes are filled, *that* can be moved by rail; and the railroads will be expected to stand around prepared to handle the overflow and the imbalance. Presumably, if the weather is stormy and the planes don't fly, the Post Office will take the traffic to the railroads. Who is going to compensate the railroads for the cost of maintaining stand-by facilities for use in hauling the imbalance and the overflow—and all the mail on the days when the air lines aren't in operation?

Two Ways to Go

Railroad ability to deal with the situation realistically—and in the public's interest in overall economy in transportation—could be secured in either of two ways: (1) By permitting the railroads to depart from standard rates (either upward or downward) whenever actual costs of specific movements vary from the average; or (2) by authorizing the railroads to withhold standard charges from such shippers, including the government, as would not agree to ship a substantial part of their "cream" (and not the "skim milk" only) by rail.

The attitude toward the railroads on the part of government—and also on the part of those business people who would defend the present regulatory framework—is utterly inconsistent with the principles which must be observed if private enterprise in transportation is to continue to exist. The illogic of the situation the railroads have been backed into is so apparent, with a minimum of observation and analysis, that public understanding of what is going on is not impossible of attainment. But the public does not now realize what is happening.

The railroads are being falsely interpreted to the public as a "sick" industry. There is nothing sick about the railroads—they are economically and technologically capable of tremendous growth in traffic and in improved public service. The sickness lies, not in the industry, but wholly in the complete lack of contemporary realism by government in its treatment of transportation.

Personal Selling Biggest Business-Getter

The most important business-getting tool open to the railroads is personal calls on shippers by freight salesmen. So replied a large majority of the regular monthly poll panel of industrial traffic managers of our affiliated publication, *Railway Freight Traffic*, in August. The panel found value in other promotional avenues—like direct mailing of service information, industrial location aids, and advertising in national magazines—but reserved top effectiveness for what used to be termed "solicitation," but which most shippers would now like to call "personal sales."

Of the total of 106 ballots received, 75 gave first place to the freight representative as the single most effective instrument of sales. Many of the shippers were critical of the kind of personal solicitation they now get, on the average, but insisted that, given the improvements they suggested, nothing can beat the salesman in getting traffic.

Francis C. Tighe, traffic manager for Union Carbide & Carbon Corp., for example, wants the railroad salesman to be so important that his bosses at headquarters will "give first priority to his requests, his advice and his recommendations." W. H. Franklin, traffic manager of Brown Forman Distillery, likes to see well-informed salesmen who "show an enthusiastic interest in *your* business." C. F. Johnson, top traffic officer for National Store Fixtures Company, warns against the peril of too infrequent calls by railroad representatives; says the shippers get the idea a twice-a-year man "is not interested in my business."

Probably the most succinct statement of what most of the panel members appear to believe was contributed by Eugene Landis, general traffic manager of International Minerals & Chemical Corp. He wrote: "The other forms of promotion are good, but nothing can replace intelligent, personal salesmanship."

None of the other business-getting devices which were also listed for the panel's choice came in for disparagement or dismissal. Most of the shippers believed them to be useful adjuncts to the salesman. Of significance is the fact that national advertising in *business* magazines got a point score of 224, compared with 140 for advertising in *general* magazines.

Many of the replies stressed the fact that no quantity or degree of "fancy" sales effort would help merchandise a poor product. Wrote Paul R. Glick, director of traffic of Procter & Gamble: "Having a high quality service and selling it to the buyer are both necessary elements in holding what you have and in getting new business."

THE PRACTICAL APPROACH IN . . .

Selecting a Rail Section

Analysis of all cost factors involved, including maintenance expenses, throws balance in favor of heavier rail

By **G. W. HUNT**

Maintenance of Way Inspector
Baltimore & Ohio

The choice of rail weight should depend primarily on the duties it is to perform—that is to say, on the demands that will be made upon it for stiffness and strength. These demands will be determined mainly by the magnitude of the wheel loads, and their velocity and frequency. Other subordinate considerations, which will suggest themselves, may modify the choice, but these will be rare exceptions.

Out of the experience of the past, the American Railway Engineering Association has recommended six rail sections to choose from. For the purpose at hand, only three of these weights need be considered. They are:

132 lb.—For heavy-duty lines

115 lb.—For medium-duty lines

100 lb.—For light-duty lines

A few large systems feel, however, that a heavier section is desirable, for what might be termed extra heavy-duty lines, and weights in excess of 132 lb. also will be considered here briefly.

What Is Life Expectancy?

The accompanying table will convey some idea as to what these duties imply, and the life expectancy of the rail. By "life expectancy" is meant economic life both as new and repair rail, or the life where rail failures and surface failures begin to outweigh, in expense, the cost of more frequent renewals. Economic life is expressed both in gross tons carried and in years. The division between life as new rail and life as repair rail will vary with different roads, depending on the relation between the ton-miles carried by the "new rail" lines and the ton-miles carried by the "repair rail" lines.

There are probably not more than a half dozen railroads in the United States that have as much as 10 per cent of their main tracks carrying 25 million gross tons per year over any extensive period. For the entire main-track mileage of all railroads, the percentage that could be classed as extra heavy-duty would probably not exceed 5 per cent. The extra heavy-duty class is, therefore, not representative and need not be discussed further. In regard to Class 4 in the table the case is different. The track mileage falling in this class on many of the larger railway systems ranges from 10 per cent to 30 per cent or more. As a general rule, these systems find it practical and economical to maintain tracks on light-duty lines with repair rail that has passed its economic life as new rail.

A Railway Congress Paper

This article is based on a paper submitted by Mr. Hunt to the VIII Pan American Railway Congress on Subject No. 10, "Features in the Selection of Weight of Rail for New or Rehabilitated Lines." It is presented here because of the interesting manner in which Mr. Hunt deals with determining which rail section will give the best results under a given set of conditions.—Editor.

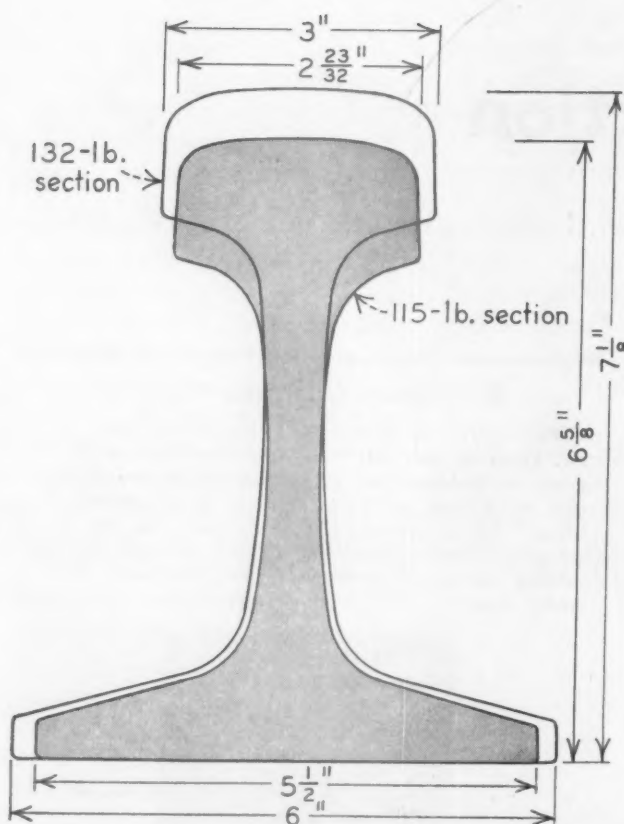


G. W. Hunt

Difficulties arise when new rail shortages, over an extended period of time, deny such lines adequate repair rail. An acute situation arises when new industries seek locations on such lines and modern motive power is moved in to haul the loads. The 75-lb., 85-lb. and 90-lb. sections, long past their economic life, were made for the wheel loads, speed and traffic conditions of a half century ago. Like backward nations, these lines have lagged behind and must be rehabilitated if they are to serve the common weal. The question is "how?"

If they are furnished new heavier rail, which they should have, it will solve the dilemma. But if this cannot be done without robbing the requirements of the heavy and medium-duty lines, some of which are in almost as bad a predicament, one had better think twice. It hardly ever pays to rob Peter to pay Paul. The need for rehabilitation arose because of the inadequacy of new steel for the heavy and medium-duty lines. The proper solution is to remedy this inadequacy at its source.

The practice of large systems of breaking their lines into two categories, "new rail" and "repair rail" territories, is fundamentally sound. In many instances it enables them to dispense with dual rail standards without any sacrifice in economy. The new rail is confined, generally, to heavy-duty lines and to portions of medium-



WHETHER TO USE 132-lb. or 115-lb. rail under a given set of conditions is a question discussed by Mr. Hunt. This drawing, which shows the two sections at one-half actual size, illustrates the physical differences between them. He points out that the 132-lb. rail is 35 per cent stiffer, 25 per cent stronger and has 13 per cent more head metal. The most important result of these differences, according to Mr. Hunt, is to make it possible to realize important economies in lining and surfacing track if the heavier section is used.

duty lines that carry important passenger traffic. After about 50 or 60 per cent of its total life is consumed this rail is relaid in medium to light-traffic lines, and in some cases in fairly heavy-traffic lines provided they carry few or no important passenger trains. The relationship of its life as new rail, measured in tons carried, to its life as repair rail, measured in tons carried, should be about in the ratio that the gross ton-miles over the new rail bear to the gross ton-miles over the repair rail.

This practice does not alter the amount of new rail required to maintain a system. It simply gives the heavy-duty and medium-duty lines (where they carry important passenger trains) a preferential status from the viewpoint of safety and riding condition. Neither does this practice deprive the "repair rail" lines of what is due them, for the heavier repair rail still retains stiffness and strength comparable to the lighter new rail which, under a dual standard, would have been used. The one objection to this practice is that it involves two rail layings during the life of a rail in main track, the cost for which must be justified by the greater safety and better riding condition which the practice provides.

The increasing axle loads and higher speeds, which forced the replacement of the lighter rail weights with heavier sections during past years, will probably have little influence in the future. Wheel loads have already

Cheap Steel Versus Expensive Labor

"The engineer [in selecting the weight of rail to be used] will choose wisely only if he considers the effect of his choice on other accounts, of which the most important is track lining and surfacing. This is almost entirely a charge for labor. The pay rate for track labor during the past 35 years, since the beginning of World War I, has risen about tenfold, while the cost of rail steel, considering its salvage value, has barely doubled. The expenditures for lining and surfacing track have been running about four times the expenditures for rail and accessories, or just about double the proportion it did in earlier periods when an adequate supply of rail was available.

"The explanation is that the work that should be done with cheap steel is being attempted with expensive labor; after all, the laying of new rail is the most effective means known to restore surface and riding conditions. The continuation of abnormal expenditures for surfacing, long after the rail has passed its economic life, aside from being wasteful, can result only in increasing the mileage requiring rehabilitation.

"Deferred maintenance and the need for rehabilitation are so closely related that if the first were prevented the second would seldom arise. The remedy for the one is the remedy for the other, namely, laying a sufficient supply of new rail steel, from year to year, for their prevention. This might be termed rehabilitation in advance on the installment-plan basis, as contrasted with rehabilitation by a major operation after the patient is about ready to expire.

"The losses from deferred maintenance can never be recovered. They have been paid for as they developed in excessive labor charges, train wrecks, train delays, damage claims, etc. The best that rehabilitation can do is to bring such losses to a halt, either suddenly or gradually, by the only means available—increasing the rail supply."

reached a point beyond which it is unwise to go until some economic means are found to increase the power of the steel to resist the crushing effect of the wheels. Such means are not in sight and the 132-lb. and 115-lb. sections are, therefore, very likely to endure much longer than any of the lighter sections that preceded them. The two variables, load and speed, therefore, may be regarded as constants, being the same for both heavy and medium-duty lines. In other words, the same motive power is interchangeable for both duties.

With Class 1 and Class 4 ranges of the table thus disposed of, and with the loads and speeds reduced to constants, the choice of weights is narrowed down to the 132-lb. and 115-lb. sections. The controlling factors, if a choice is to be made between these two weights, are traffic density and the importance attached to the passenger traffic. Many large systems that split into natural regions, one with generally heavy traffic and one with generally medium traffic, will adopt both weights and commit themselves to a dual rail standard.

The chief engineer of a small or medium-sized road will find a choice more difficult. While the tonnage hauled may vary considerably at different locations, he has no logical reason to adopt a dual standard. He must make a decision and recommend either 132-lb. or 115-lb. rail. If the average traffic density leans toward the figure of 18 in our table he will recommend 132-lb. rail, and if it leans toward the figure 12 in the table he will recommend 115-lb. If it falls around 15, just half way between these figures, he will face a dilemma.

CLASSES OF DUTY FOR VARIOUS WEIGHTS OF RAIL

	Extra-Heavy 1	Heavy 2	Medium 3	Light 4
Rail Weight	140 lb. or more	132 lb.	115 lb.	100 lb.
Maximum axle load	75,000 lb.	70,000 lb.	70,000 lb.	60,000 lb.
Speed (m.p.h.)	50 to 80	50 to 75	50 to 75	40 to 60
Traffic density (million tons per year)	20 to 40	12 to 28	6 to 18	1 to 9
Weighted average density (million tons per year)	25	18	12	4
Passenger trains per day	5 to 7	4 to 6	3 to 5	2 to 4
Economic Life				
Average as new rail (millions of gross tons)	250	200	160	120
Average as new rail in years	10	11	13	30
Total life as new and repair rail (millions of gross tons)	450	350	300	200

He may try to resolve his doubts by considering the effect of his choice upon the total investment in the line and its subsequent effect upon maintenance expenses. If the line involves other formidable and costly structures, he will probably discover that the rail and its accessories constitute not more than 10 per cent of the capital expenditures and that their maintenance is consuming not more than 1 per cent of the road's annual gross revenue. From these percentages, he deduces that the 132-lb. rail, although it is 15 per cent heavier than the 115-lb. section, will increase the capital expenditure by only 1.5 per cent and the maintenance expenses by only 0.15 per cent.

But these percentages, although they look small, run into many dollars, and he is still in a quandary. He proceeds to look into the indirect savings that might reasonably be expected to result in other accounts than rail by using the heavier section. He knows that the 132-lb. rail is 35 per cent stiffer and 25 per cent stronger and has 13 per cent more head metal, and that these features will assure it a longer life, particularly if the line has any great amount of sharp curvature. But more important, he notes that for many years, with lighter rail, 25 per cent of all expenditures for maintenance of way and structures have been going into lining and surfacing track and that this account has been consuming about 4 per cent of the annual gross revenue. He proceeds to trace this 25 per cent to its causes and comes to the conclusion that it is itemized as follows:

- 1.—Fifteen per cent caused by joint gaps and irregularities at joints that develop from wheel impacts.
- 2.—Five per cent caused by non-uniformity and instability inherent in the ties, ballast and subgrade.
- 3.—One per cent caused by impact of wheels at engine-wheel burns.
- 4.—Four per cent caused by deficiency in rail stiffness.

He can do little to overcome causes (2) and (3) by increasing rail weight. The stiffer joint bars that accompany the 132-lb. rail, by their greater power to resist flexure, will reduce the effect of cause (1) by some intangible amount. It is cause (4) that absorbs his attention; by increasing his maintenance expense for rail and accessories by 0.15 per cent he can reduce his maintenance expense for lining and surfacing by 16 per cent,

which is equivalent to 4 per cent of his total expenses for maintenance of way and structures.

More specifically the net saving is computed as follows:

For "X" dollars invested in the line—

Annual gross revenue	0.25X
Used in maintaining way and structures (0.25X x 0.15) .....	.0375X
Additional cost for rail and accessories (.0375X x .0015) .....	.00006X
Reduction in costs for lining and surfacing (.0375X x .04) .....	.00150X
Interest charges increased by (.015 x .04X) .....	.00060X
Net saving .....	.00084X

If his road is capitalized at \$500,000,000 and the present 100-lb. rail is obsolete and badly in need of rehabilitation, it may require 10 to 15 years to change over completely to a heavier rail section. If he chooses the 115-lb. section, hardly adequate when new for his present traffic conditions, he may have to abandon it in 10 or 15 years for the 132-lb. section and will lose the chance of saving by that time \$500,000,000 x .00084 or \$420,000 per year.

While the illustration given confines the choice of a weight to Class 2 or Class 3 duty, representative of heavy coal-carrying roads, a similar problem faces the engineer whose traffic conditions are in the order of Class 3 or 4. If he is using a 90-lb. section, for instance, and wishes to retain a single rail-weight standard, he will probably choose between the 100-lb. section and the 115-lb. section.

New or Rehabilitated Lines

The features that determine the selection of weight of rail for existing lines will, generally, determine the weight for new or rehabilitated lines, provided there are no physical reasons to prevent the use of heavy power and high speeds. However, many large systems have feeder lines where light bridges and heavy grades and curvature restrict both the power and the speed, and where the tonnage carried is of the Class 4 order in our table. These lines are generally laid with 85-lb., 90-lb. and 100-lb. repair rail with age up to 50 years, and much of it in need of rehabilitation.

Obviously, in view of the traffic condition, a new 100-lb. section would endure for 30 years; but so will a 115-lb. or 131-lb. repair section. The 115-lb. rail, assuming it had lost 5 lb. of its weight prior to its relaying as repair rail, would weigh 110 lb. If it had no other serious defects to bar its use as repair rail, its value to the railroad, in dollars per ton, could run as high as 91 per cent of the price of new 100-lb. rail. Obviously, such rail is not going to move back to the mills at scrap prices. The wider the margin between the price of scrap rail and the price of new rail, the more difficult it will be for the steel mills to attract usable repair rail back to the mills.

This situation has existed over many decades and will probably continue to exist subject, as it is, to an inexorable law of economics. It has encouraged the breaking down of systems into new rail repair territories, to the advantage of the railroads, if not the advantage of the rail producers. It will probably remain a prime feature in the selection of rail weights for rehabilitated lines in the future.



What happens when a half-dozen railroads try out a pair of locomotive demonstrator units of a new versatile design? Here's the story on the new F-M "Train Master" in a variety of jobs from humping to passenger service.



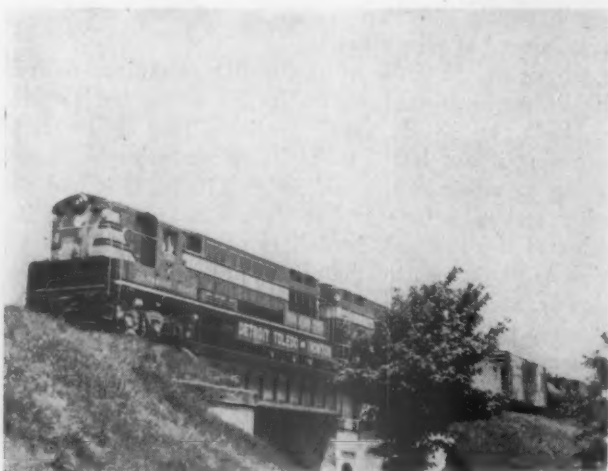
Mountain Freight—

B&O: Handled up to 5,263 tons on mountain divisions out of Cumberland.

WM: Tonnage freight between Cumberland, Baltimore and Elkins over 3 per cent grades and 20-degree curves.

SEVEN TYPES of service tests—from passenger to humping—have just been completed on seven eastern railroads by Fairbanks-Morse "Train Master" demonstrator Units 1 and 2 with no changes in the gear ratio or component parts. To see how well these 2,400-hp. units fill the gap between 1,600 and 3,000 hp., and what they can do when two are teamed together, *Railway Age* takes you on a picture tour showing typical examples of what they did in the different services on the different roads.

"Train Masters" Get Workout



Heavy Freight—

Reading: 8,006 adjusted tons handled with a single unit.

DT&I: Took 3,996 tons up a compensated ruling grade of 1¾ per cent.

PRR: 9,504 tons Columbus to Hartsdale.

NYC: Standard three-unit tonnage between Syracuse, Youngstown and Ashtabula.



Passenger Service—

NYC: "Cincinnati Mercury" and night sleeper train between Cincinnati and Cleveland. During layover, one unit worked West Sharon hump while other worked transfer.

St. Lawrence branch trains of nine 80-ton cars with one unit.

"Advance Knickerbocker," 17 cars, Boston-Albany.



Fast Freight—

B&O: "Time Saver" freight, Willard, Ohio, to Chicago, 279 miles in 5 hr. 48 min. running time with average load of about 3,600 tons.

NYC: Symbol freights between Boston and Elkhart with three-unit tonnage.

LOG OF THE "TRAIN MASTER" EASTERN TOUR

May 18 to 22	—PRR
May 25 to 30	—DT&I
May 30 to June 6	—B&O
June 7 to 12	—WM
June 13 to 30	—At Atlantic City Exhibit
July 1 to 7	—Reading
July 8 to 15	—PRR
July 15 to Aug. 3	—NYC
Aug. 5 to 25	—NYNH&H



Mail and Express—

PRR: 16 to 24 cars between Chicago and Pittsburgh.

NYC: 20-car mail and express trains between Buffalo, Cleveland and Chicago; and 20 to 25 car mail and express trains between Chicago and Springfield, Mass.

... ON EASTERN DEMONSTRATION TOUR



Suburban Service—

New Haven: After arriving Boston at 11:50 p.m. with time freight from Maybrook the two units were split.

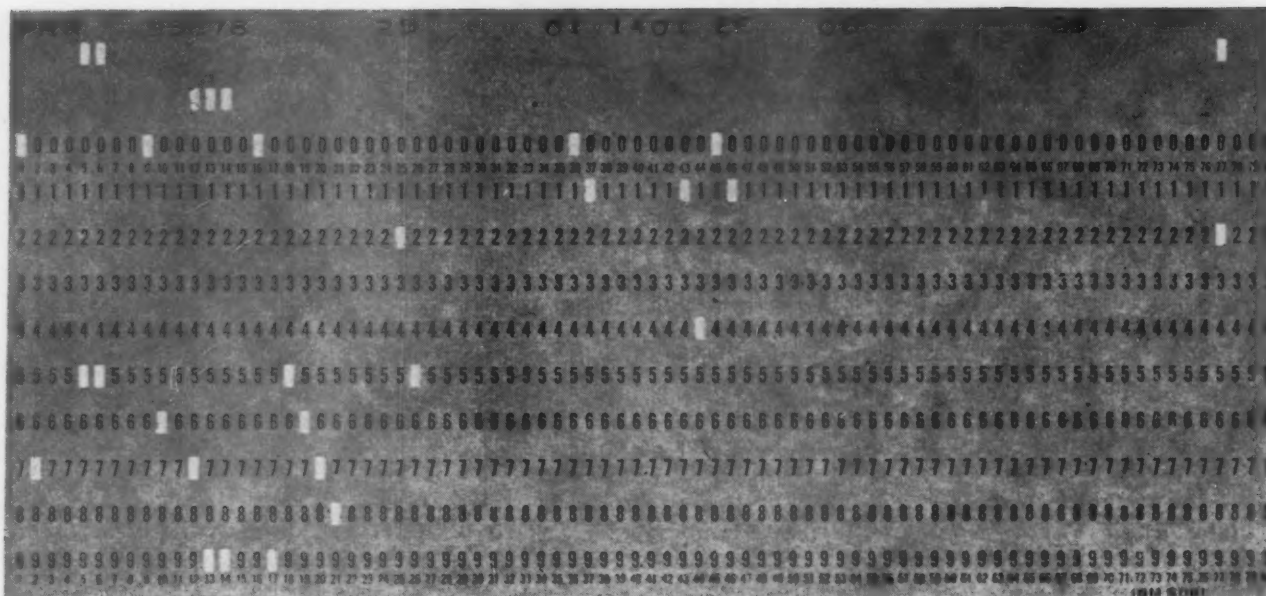
One entered commuter service at 2:40 a.m., the second at 6:10 a.m. After completing rush-hour assignments, two units recoupled and departed Boston on time freight at 11:55 a.m.



Switching and Humping Operations—

B&O: Flat switching with one unit at Willard while the other unit humped as next immediate assignment after bringing time freight from Chicago and while waiting for tonnage back to Chicago.

Reading: Pushed 6,370 actual tons (78 loads) up the Rutherford hump—time for the operation was 25 min., speed 3 m.p.h.



PENNSYLVANIA CAR 95678 arrived at Station 1401 (St. Luc yard, Montreal) on the 25th and left on the first of the following month. It entered the yard empty and left in

the same condition ("EE"), having been there six days (06). The second "25" is merely repetition of the arrival date.

HOW PUNCH CARDS HELP AS . . .

CPR Cuts Car Hire Expense

International Business Machine punch cards, used by the Canadian Pacific for car accounting, have been put to still a further use by that line's transportation department.

They are now helping to minimize car delays and thereby reduce monthly per diem payments. Since the new punch card system went into effect in January 1952, the average time foreign cars are on the road has been reduced by two days.

The monthly payment of per diem to foreign railroads for the use of their cars while on Canadian Pacific rails has amounted to approximately \$800,000. In an effort to reduce this figure and keep per diem payments to a minimum, a record of all cars must be kept and searched to locate mishandling and car delays. A limited amount of searching was accomplished when manual methods were in vogue, but this proved costly and inconvenient because the record books were available only at night.

The development of the punch card system for car accounting provided a ready means to conduct a detailed, up-to-the-minute search for car delays, that is, cars detained at a station for an undue length of time. This work can be scheduled to take full advantage of the various machines used for car accounting purposes, when those machines are not carrying peak loads. The new method allows for greater coverage as it is considerably faster and more accurate. Under the manual method, "searching" took approximately 450 man-hours per month to search about 75 per cent of the foreign car records and even then did not give a complete picture of all delays and mishandling. Punched cards permit 100 per cent coverage of records on foreign cars, while taking only 30 to 40 machine hours per month, with the in-

formation of the delays coming as a by-product of the work as the cards and I.B.M. machines are used primarily for record purposes.

Supplying this information to all concerned in freight car movement, including those in charge at each station where a delay is found, has had a marked effect on the Canadian Pacific's car hire account.

The procedure for obtaining information for searching the car record file is simple. Throughout the month, record cards are made for all cars moving as reported on the conductor's reports of freight and mixed trains. About the twelfth of each month all record cards for the previous month are put through the (I.B.M. Type 402) electric accounting machine. Each record card carries the car number, date and station car left, and date and station car arrived at. The arrival date and station of the first card is compared with the leaving date and station of the second card. The same comparison is made between the second and third card for the particular car and all subsequent cards. Providing the station numbers are the same, the leaving date is deducted from the arriving date and if the result is equal to or greater than the specified number of days (five) considered as a delay a summary card is obtained from the I.B.M. summary punch Type 523. The five-day figure naturally is an arbitrary one and could be changed to meet various conditions. This does not mean that car service agents don't take up with local agents the more numerous two- and three-day delays. The arbitrary figure was set to pick up the worst offenders.

The summary card carries the following data:

1. Owner
2. Car number

CASE 35

1

DURING

PEMBROKE

JUNE

3712

[illegible]

64

3. Date	}	Arrival
4. Station x		
5. Loaded or empty	}	Leaving
6. Date		
7. Station x	}	Leaving
8. Loaded or empty		
x same		
9. Number of days at the one		

These cards are then divided into four groups:

- | | | | | | |
|----|---------|--------|---|------|--------|
| 1. | Arrived | loaded | — | left | loaded |
| 2. | " | empty | — | " | " |
| 3. | " | loaded | — | " | empty |
| 4. | " | empty | — | " | " |

A summary statement is also compiled showing station and number of cars and days in each of the four groups mentioned just above.

MACHINES make possible checking delay records on all foreign cars with less effort than when manual methods were in vogue.



Where Will the Gas Turbine Go?

Experience in service on the Union Pacific is rapidly providing the answer to this question as difficulties are ironed out and railroad requirements are more closely met

Questions in the minds of engineers and operators of motive power concerning the gas turbine locomotive include the following: What is being done with heat exchangers, intercoolers, mechanical drive, free-piston gas generators, coal-burning gas turbines, propane and other major developments being talked about in technical magazines?

So far the Union Pacific is the one road which has had significant experience with the gas turbine. The 15 new locomotives now under construction for that road, like the 10 now in operation and like the original pilot model, will employ a simple-cycle, 2-stage gas turbine,

with no heat exchanger or intercooler, no water injection and no mechanical transmission or other drastic change.

In a progress report, September 1, J. E. Wilson of the Locomotive and Car Equipment Department of General Electric Company, builder of the UP locomotives, said that a heat exchanger employing the exhaust gas to heat the compressed air would improve fuel consumption, but that no present design of such an exchanger could be placed inside the limits of the locomotive cab. Intercoolers, he said, are valuable to cool the compressed air between two steps of compression, but at present are impracticable either because of size or amount of water required for cooling. Mechanical transmission, free-piston gas generators and coal burning gas turbines were referred to as major developments in themselves with work being carried out in this country and in Europe.

Water Injection Increases Power Output

Water injection, Mr. Wilson said, would also increase power output, particularly when aimed at elimination of the gas turbine's variable horsepower due to ambient and altitude changes, but this again imposes a water supply problem.

The burning of propane is being tried out on one unit and Mr. Wilson said that its price, including cost of handling and transportation, indicates that this fuel may be desirable in certain areas.

Definite progress has been made and Mr. Wilson believes that experience will make the gas-turbine-electric locomotive a much better companion for its highly successful contemporary, the diesel-electric. Mr. Wilson's report brought out the conclusion that the basic diesel-electric drive is well suited for the gas-turbine-electric locomotive.

The present load control system on the gas-turbine-electric is not ideally suited to the turbine power plant because it does not fully exploit the power possibilities of the turbine, whose horsepower output varies considerably with changes in altitude and ambient temperature and barometric pressure. The ideal control system for this power plant is one that will call for all the power of which the turbine is capable up to the limit of the transmission equipment and then limit power output at this point.

The "Ideal" Power Plant

Conversely, the ideal power plant is one that will furnish the same horsepower under all altitude and ambient conditions except that a natural characteristic of more horsepower as the temperature drops might be desirable due to the increase in train resistance at low temperature. Mr. Wilson believes the new locomotives will more closely approach each of these ideals.

The 4,500-hp., 8-motor, 260-ton design has proved to be most satisfactory, he said. There was much concern at the beginning over the high horsepower per axle and the high weight per axle designed into this locomotive. By comparison, it has the same horsepower as a 3-unit diesel-electric, yet it has only two-thirds as much weight and two-thirds as many motors. The horsepower per axle

may go as high as 675, compared to a maximum of about 400 on the diesel-electric freight units. The weight per axle goes as high as 72,000 lb., as compared to a maximum of about 60,000 lb. per axle for the diesels. However, these fears have proved unnecessary in that both the high horsepower ratio and the high axle weight have been quite satisfactory, according to the report.

It was feared the locomotive would be slippery—that is, that the high horsepower per axle would lead to excessive slipping of the wheels. This has not developed. In fact, the locomotive has developed just the opposite reputation for being anything but slippery, he said, adding that the high axle weight has not caused trouble. In regard to wheel wear and flange wear he called the performance exemplary.

Turbine Problems

Turbine mechanical problems in the locomotives now in service have been more numerous than Mr. Wilson expected. Troubles with the nozzle bolts, the thrust coupling between the turbine and compressor, the second stage buckets, the rotor wheels, and the exhaust hood have been experienced. None of these problems, however, has been fundamental, and all have been relatively easy to correct by simple changes in design or improvements in manufacturing techniques, he said. It is felt that with modifications which have been made in the field plus corresponding design changes on the new locomotives, these mechanical troubles have been brought under control and will be gradually eliminated.

Two problems which are fundamental with a gas turbine burning Bunker C oil are high temperature and chemical attack. The operating temperature of 1,350 deg. F. at the first stage nozzle, plus occasional hot spots up to approximately 1,700 deg. F., immediately introduce a metallurgical situation which has proved difficult, but which Mr. Wilson declares is being steadily improved. Modifications to the airflow pattern through the combustion system have alleviated the hot spot troubles on the first stage nozzle of the turbine. Still to be overcome are short life of the combustion chamber cap and the No. 2 liner section. Many changes have been made to this part of the combustion system resulting in continuing improvement.

Negligible Chemical Attack

Chemical attack by the ash of the Bunker C oil, a serious problem on the pilot locomotive, has not developed seriously in any of the locomotives now in service, according to the report. Appearances now indicate that the turbine nozzles and buckets will achieve a very creditable life, thanks to the availability of a satisfactory fuel. The fuel specification and the production of this fuel are the results of much experience and development.

With the pilot locomotive, it was quickly learned that it could not filter or burn just any Bunker C oil which might be available. A specification was established covering the acceptable fuel in all respects except chemical make-up of the ash content. Very rapid deterioration of the turbine parts was encountered when operating at high temperatures and it was determined that certain chemicals in the ash content would cause corrosive attack

at temperatures of approximately 1,300 deg. F. Much research and effort established that the presence of sodium and vanadium in the ash in certain ratios caused the attack. Strangely, it was also discovered that the presence of vanadium counteracted the effect of the sodium and that calcium and other materials would counteract the effect of the vanadium. The specification then was written establishing a minimum allowable ratio of vanadium to sodium, and then a minimum allowable ratio of calcium to vanadium. This fuel specification was met although at a slight price premium, and Mr. Wilson reports this oil is now being burned successfully.

At present, the turbine combustion and locomotive cooling air—totaling 160,000 cu. ft. per min. maximum—is brought in through 120 air filters in the sides of the cab. These 120 filters are described as a high maintenance item. In addition, this air intake system causes a considerable pressure drop and temperature rise to the air before it reaches the turbine inlet. At times, this results in a loss of as much as 600 or 700 hp. These filters will be eliminated on the new locomotives, and also on the existing locomotives by field modification, resulting in a major maintenance saving, plus elimination of this horsepower loss. Turbine air will be taken into the air inlet silencer directly from above the locomotive while the cooling air will be brought in by motor-driven blowers in the roof.

Piping has been a problem on the existing locomotives. Mr. Wilson said leaks have been prevalent and, as might be expected, located in the most complicated and inaccessible places. Extensive changes to the piping systems are being made on the new locomotives and it is expected that one of their outstanding improvements will be in piping.

Performance and Application

For the first year of operation, February 1, 1952, through February 1, 1953, the six locomotives in service during that time all averaged well over 9,000 miles per month, in a district only 185 miles long. Two of the locomotives, after 12 and 10 months, respectively, had operated over 100,000 miles. Turbine hours average about 400 per month. Overall availability for all locomotives was about 80 per cent.

The maximum tonnage train that a locomotive can start and pull up a particular grade is determined by the weight on drivers and the motor capacity. The speed at which a locomotive can pull a given train up a given grade is determined by the locomotive horsepower. Obviously, the 260-ton, 8-traction motor, gas-turbine-electric cannot pull as heavy a train up a given grade as a 375-ton 3-unit diesel-electric with 12 traction motors.

Mr. Wilson said, however, that any train that the 4,500-hp. gas-turbine-electric can pull up a given grade within its continuous motor rating can be pulled at the same speed as with the 4,500-hp. diesel-electric—in fact, slightly faster, because of the lower locomotive weight.

If the railroad philosophy is for higher speed on limiting grades, rather than extremely heavy trains regardless of speed, the smaller, lighter gas-turbine-electric can do the same work as the 3-unit diesel, he declared, and he emphasized that this has proved to be the case on the Union Pacific.

(Continued on page 105)



RAILROAD SAFETY MESSAGE is taken right to the schools. While one B&O patrolman delivers a short talk to pupils, another sets projector to show movie.

Juvenile Trespassing Reduced

... HOW THE B&O DOES IT

Movies and talks by patrolmen are parts of a carefully matured program to help keep down depredations, accidents to kids

Stones, sticks and children don't belong on private property, namely the railroad tracks." This is a passage in a letter to the Baltimore & Ohio from a grade school student. The youngster was writing a thank-you note after seeing one of the two films which the B&O has been showing in the elementary schools of its 13-state area during the past three years. The boy had learned his lesson well—stones, sticks and children *don't* belong on railroad property.

Simple and obvious though this lesson may seem, the B&O has expended a good deal of effort and ingenuity to see that it is taught to the right people at the right time. The right people are children, especially boys between the ages of seven and fourteen, and the right time is before they get into trouble causing injury to themselves and others on railroad property.

In the old days, it was considered sufficient to have the system's police force chase the youngsters away, warning them when possible and tracking down mischief-makers for possible prosecution. Inevitably these activities continue, but the B&O has found that its preventive program helps lessen the wear and tear on its patrolmen's shoe leather and the nerves of its safety officials, as well as accomplishing its primary objectives.

H. L. Denton, B&O general superintendent of police, estimates that the school program has reduced juvenile depredations by as much as 75 per cent. Mr. Denton hasn't statistical proof of this, obviously. His estimate is based on the informed guesses of his staff. Aside from this gain, there is, of course, the incalculable saving represented by fewer deaths, injuries and property damage due to youngsters' pranks.

The B&O has discovered that it can win enthusiastic school cooperation by presenting its safety message as a self-contained package. This package contains three items—a short talk to the children by a uniformed patrolman, the showing of a 14-minute film, and the presentation to each child of an attractive booklet telling the safety story. All three of these media stress several related themes—that it is dangerous to play on railroad tracks and installations, that railroad property is just as private as a person's home, that public grade crossings are the proper place to cross tracks, and that care at crossings is necessary.

The B&O has produced two films for grade school showings. The first was "The Happy Locomotive," telling the story of how a sad animated locomotive became happy when the children along its route stopped placing obstacles on the track, throwing stones and otherwise engaging in juvenile mischief. The picture uses a novel production technique that combines limited animation with the slide-film process. "Happy Locomotive" was shown to 1,500,000 children in more than 4,000 schools before it was withdrawn because it had saturated its market. A sequel, "Close Call for Jimmy," another sound-slide-animation production in color, had its premiere last year and had played in 1,800 schools to 680,000 children when school ended last May.

The patrolman's talk introducing these films is carefully geared to the youngsters' interests and knowledge. Members of the B&O police force, by the way, enjoy this phase of their duties, and have become expert at pleasing children from kindergarten to eighth-grade age. The booklets given out at the film showings are also carefully designed to hold children's attention. There are two of them—"Trains, Tracks and People" and "The Secret of Switchman Sam"—and they provide something the youngsters can take home to show their parents—another audience, incidentally, that the road finds it worth while to reach.



"RAILROAD SAFETY POLICE" force members get "official" badges before seeing film "Close Call for Jimmy."

The B&O has had a heartwarming response to its program. Pupils, teachers and principals write in continually, and the road also receives hundreds of paintings and drawings on railroad themes done by the children. After seeing "Close Call for Jimmy"—telling the story of how young Jimmy prevents some "bad young'uns" from causing an accident—a girl in the second grade wrote to the B&O police officer: "That movie taught us a lesson. I enjoyed it too. I guess Jimmy learned a lesson. And the bad children were awful. I wonder how their mother could stand them. Love, Ethelynnne." And a sixth-grade boy wrote: "It is especially good for the Logstown children because most of them live right by the railroad. Through that movie, I think there will be less accidents and less destruction to property of the railroad."

A Pittsburgh school principal wrote: "The boys and girls will long remember the colorful movie and the clear and simple rules of safety taught them."

In addition to this kind of response, General Superintendent Denton has an anecdote he frequently employs to show the program's benefit to the police force.

In searching for some boys who had tried to derail a train in East Baltimore, B&O police ran into the usual riddle—who were the boys and where did they live? An officer checking the area was approached by a 14-year-old.

"Say," the boy said, "aren't you the officer who showed us that safety film last week?" When the officer said he was, the youngster continued, "I bet I know what you're after. You're after those kids who put that stuff on the tracks." The B&O man agreed once more, and soon the boy was giving him names and addresses. The guilty youngsters were immediately rounded up and given an impressive lecture in Juvenile Court. And news of the incident spread promptly through the neighborhood—another well-publicized warning that it is unwise to tamper with railroad property.



TAKE-HOME BOOKLET, "The Secret of Switchman Sam" is given to each pupil attending the safety sessions.

COORDINATED ASSOCIATIONS TALK ABOUT **Safety, Service and Seniority**

Meetings of five mechanical associations at Chicago last week bring out record attendance in a non-exhibit year

Before the Coordinated Mechanical Associations opened their 1953 meetings on September 14, at the Hotel Sherman, Chicago, one of the questions in the minds of a lot of railroad men was the possible effect of the June Atlantic City meetings on the September meetings, which involve the Air Brake Association; Master Boiler Makers' Association; Car Department Officers' Association; Railway Fuel and Traveling Engineers' Association and the Locomotive Maintenance Officers' Association.

The answer was that the effect was good. At the end of the first day registration totaled 2,200 men and 650 ladies. Every one of the five associations had a greater registration than last year, and there was no exhibit this year.

BOILER MAKERS DISCUSS WELDING

The Master Boiler Makers' Association opened its 51st annual meeting with a first-day registration of 120 active members and 60 guests. President H. R. Barclay, Secretary-Treasurer A. F. Stiglmeier and Executive Board Chairman F. R. Milligan stressed the strong comeback the association has made in overcoming the adverse effect on its activities of the rapid decline of the steam locomotive.

Five of the association's six technical reports dealt with diesel-electric locomotive maintenance problems. The steam locomotive report dealt with the recommended practices for preparing a steam locomotive boiler to remain away from its home terminal for a 30-day period.

With the rapid decline of steam locomotive boiler work the individual boiler supervisor is interested in what he can do to educate himself for other positions. This personnel problem was the subject of an address by G. L. Ernstrom, general mechanical superintendent of the Northern Pacific. On his railroad, he said, boiler supervisors have demonstrated that they are as capable of handling mechanics of other crafts as are other supervisors. Some boiler supervisors have been sent to diesel schools with excellent results. One of the handicaps many boiler supervisors face, he said, is the fact that they have restricted their activities to boiler maintenance exclusively; they must adapt themselves by study and training to the new equipment and the other phases of locomotive maintenance.

Mr. Ernstrom said that the Northern Pacific is keeping the boiler forces busy by manufacturing in their own

shops at less cost many parts that they formerly purchased. They are also repairing diesel cabs, ventilators and filter louvers, welding underframes and manufacturing steel pilots and body panels. In addition a number of boilermakers are engaged in bridge structural work at one of the Northern Pacific's locomotive shops.

A SEPARATE AIR BRAKE CRAFT?

A dozen or so members of the Air Brake Association discussed the advisability of a separate craft for air brake men with a separate seniority list of its own. The general feeling was that the idea was sound in view of the increasing complexity of air brake equipment. It would eliminate situations whereby a railroad spends months or even years training a good air brake man, only to have him "bumped" off the job by a man from another craft with greater seniority but little knowledge of air brake work. The air brake system was described as far too important to be maintained by anyone not fully trained.

"Air Brake Know-How Pays Dividends," said J. V. Elsworth of the New York Air Brake Company in pointing out the need for thorough understanding of basic fundamental principles. He said the instructor must know his subject, be patient and understanding and possess a sense of humor. He must teach his men to think analytically to help them diagnose trouble. Complicated equipment can be better understood if simple types are first described, and relationships explained.

G. L. Cotter of Westinghouse Air Brake described the types of empty-and-load brakes in service and their characteristics. The 400 sets of ABLC equipment on the IC were reported to be in generally good condition after 40 months service. The new ABMC brake is an outgrowth of the ABLC which should be simpler to install, inspect and maintain, while at the same time be almost as uniform for partial loads as the ABLC.

L. B. George, assistant chief of motive power and rolling stock of the Canadian Pacific, on September 15 discussed conditions affecting "Tomorrow's Craftsmen." Before World War II, he said, railway shop crafts were practically 100 per cent skilled mechanics who had been through full apprenticeship. Conditions growing out of the war have made it impossible for the railroad shop crafts to produce enough skilled men, and the upgrading of helpers and laborers has been practiced. Thus many semiskilled and unskilled men have established a permanent seniority basis. This is making it difficult to obtain young men to serve apprenticeship. Mr. George believes apprenticeship leading to soundly trained men

for the future can only be re-established by stopping upgrading.

To achieve this aim he recommends (1) that management and labor get together and agree to discourage upgrading and improve the apprentice ratios until conditions are again normal, and (2) that both parties do everything within their power to make apprenticeship in the shop crafts attractive. Mr. George also advocated that, with the short workday and five day week, apprenticeship should be extended to five years.



PROGRESS IS NOT SELF-MADE

While railroads are public servants they are a private business, in business to make a profit, said President Paul E. Feucht of the North Western in his address to the Coordinated Mechanical Associations.

"That," he said, "is a concept that may be a little difficult for some people to understand, especially those who look upon railroads as being nothing more than a public servant. While their interpretation is partially correct, they must understand that no matter what the functions of a railroad may be, its primary purpose is to make a profit. It makes that profit by performing a public service, and as its profits become greater, its ability to give better service also becomes greater.

"On the reverse side of the picture is this obvious economic lesson: As profits disappear and losses mount, it becomes more difficult for the railroad to produce a service worthy of the name. And if the losses continue to increase, it is only a matter of time when the railroad finds it impossible to function at all.

Economic Laws Still Apply

"Some people find it hard to believe that this A B C of economics should apply to railroads—that railroads just don't go on and on, regardless of the laws of economics. In fact, too often the railroads have been taken for granted as an industry whose very size made them monopolistic and which required special government regulation not only to hold them in line but to tell them what to do.

"The truth is that the railroad industry more and more is finding itself in the position of the man who wishes he had saved money during the depression so he could afford to live through prosperity. . .

MORE COOPERATION IN TRAIN YARDS

The major point stressed as the Car Department Officers' Association meeting opened was the need for more effective cooperation between operating and car forces in yards and especially the provision of enough car inspectors and trained supervision properly to do the job assigned to these men in the generally shorter time now available. One comment made was that supervision

"Now we have direct long-haul competition with a new breed of trucks, the so-called box cars on wheels. While much can be said about the long-haul trucks and the advantages they hold through use or misuse of highways without properly compensating the public owners, it is not my intention to dwell on that here. Long-haul truck competition, fair or unfair, is not contributing a thing to the continued strength of the railroads.

"Yet strength is exactly what the railroads should have, especially in these times of high production, high wages and high costs, unless there is something to take their place. At present, however, there is nothing in existence and nothing in sight that can take over the job done by trains moving on tracks. And by that I mean the whole job—not just the lucrative segments that pay off with high revenues.

"I am not suggesting that the railroads are weak by any means. I do say that the potential for future progress of the railroads is as great as that which has been actually achieved to date.

"We must keep in mind that railroad progress is not an automatic thing—it is not self-made. . .

As to Passenger Service . . .

"Among the concepts, some of them deeply entrenched, that should be reviewed in the light of present day reality, are those having to do with the huge losses annually sustained by the railroads in providing passenger service.

"It is my firm belief that the first progressive step in that direction will be made when passenger service, on the matter of allocation of expenses, is given no more and no less consideration than freight service. In other words, passenger service should be expected to produce not only all of its out-of-pocket costs but also its share of fully distributed expenses that would otherwise have to be borne entirely by freight service. . .

"I also feel that if the railroads are to haul passengers at a profit, let alone break even in the process, more intensive development should be made of one of their great assets. This is their ability to carry a great number of people at one time at low cost. It is true in passenger service, just as it is in freight, that you first must get the volume in order to get the gross in order to get the net. It stands to reason that the more people a train can carry, the lower its unit costs. In other words, we should not accept the present capacity of passenger cars as maximum. There is obvious room for further development in that regard. . ."

needs more emphasis; that car foremen in most cases know what needs to be done, but not how to get it done with the men at their disposal; that too much responsibility is put on lead men before they are ready for it. The statement was made that experience shows concentrated effort in any transportation yard with adequate supervision will produce results even to the extent of practically eliminating hot boxes.

With President A. H. Keys, superintendent car department of the B&O, presiding, the report of the committee on "Analysis of Train Yard Operations" was presented by Chairman C. E. Dyer, terminal supervisor of car maintenance, C&NW.

"Car Department Responsibility in Successful Train Operation" was discussed by W. C. Baker, vice-president, operation and maintenance, of the B&O: "Successful operating efficiency requires uninterrupted freight train schedules," he said. "To have uninterrupted freight train schedules there must be a plan in effect that must start with the calling of the train from the initial terminal, and a time figure for its arrival at the next division terminal and at destination. The car foreman and the yardmaster must cooperate with each other in planning dispatchment of a train. Cars must be switched together in advance of the calling time of the locomotive and turned over to the car inspectors, giving them sufficient time to do their work so that when the road engine couples to the train the only additional time needed is for the terminal air brake test."

One Road's Hot Box Record

As evidence of what can be accomplished by cooperative effort in train yards, Mr. Baker cited the experience of the B&O. In 1942 this road averaged 372,732 miles per freight car failure on road, exclusive of hot boxes, 2,039,797 miles per failure in 1952 and 2,287,700 miles per failure in the first six months of 1953.

In 1942, Mr. Baker said, the B&O averaged 276,511 miles per freight car set out on account of hot boxes, this figure being raised to 588,929 miles per hot box in 1952 and 755,835 miles per hot box in the first six months of 1953.

GAS TURBINES AND SAFETY

The Locomotive Maintenance Officers' Association, presided over by S. M. Houston, assistant general superintendent motive power of the Southern Pacific, discussed reports on diesel shop planning, shop practices, flash-overs, the training of diesel personnel and the problems of safety work.

Papers were presented by D. S. Neuhart, general superintendent motive power of the Union Pacific, on gas turbine locomotive maintenance and by E. L. Duggan of the Santa Fe on safety work.

Mr. Neuhart, commenting on the relative maintenance cost of gas turbine power and diesels said, in part, "I wish that I could give you a good answer. The facts are that the locomotives have not yet been in service long enough accurately to forecast normal costs. Improvements and modifications have been made progressively to correct difficulties disclosed by actual operation

and we have good reason to believe that their long-range maintenance costs will compare favorably with the minimum for any type of power. We do know that our test locomotive now using propane as fuel has operated about 25,000 miles with virtually no maintenance required as far as the turbine is concerned and the interior parts look as good as the day the locomotive was delivered.

"Maintenance of the remaining nine locomotives now in service burning Bunker C as fuel has naturally been higher due to the additional accessories required and the corrosive effects of the undesirable properties in heavy residual fuel."

Mr. Duggan said that safety work is a matter of perpetual salesmanship and that you can never let up on the job of keeping the subject before the personnel.

TRAIN HANDLING INTERESTS TRAVELING ENGINEERS

In the Railway Fuel and Traveling Engineers' Association program of 17 papers and addresses two were devoted to steam locomotive subjects. One of these dealt with the results of comparative studies of mine-run coal, sized coal, briquettes and Bunker C fuel for steam locomotives in Western Canada. The other was devoted to smoke abatement. In addition to papers on various aspects of diesel operation, education of enginemen, and train handling, such subjects of broad interest as safety, employee and public relations and loss and damage due to rough handling were included.

In a brief address J. J. Brinkworth, retired vice-president of the New York Central, pointed out how the change in motive power has made travelling engineers' jobs extremely important. They are responsible for the continued education of enginemen and firemen, a job in which they must exercise great patience.

The last half of 1952 and 1953 up to now have been good, businesswise, but he stressed the fact that the railways are in the toughest competitive situation they have ever faced. Rough handling of passenger trains and freight loss and damage caused by rough handling do not make for good public relations and should be prevented.

Homer G. Conner, general safety supervisor of the B&O, said, "Today we live, work, play and die in a machine age. . . . We are surrounded by a maze of power machinery and the consequent toll of death is appalling, yet the machine itself cannot be held at fault." The machine, he said, is as dangerous as man makes it and more accidents result from "the willful disregard of instructions, recklessness, violent temper and lack of knowledge or training, than from any other causes."

Knowing the cause for most accidents, it is important to find the reason, he said, and then do something to correct the conditions. Each accident, no matter how minor, should be investigated, but "you will find employees will be more cooperative if they understand just why you are making the investigation. The idea of trying to fix blame should be avoided, for where it is allowed to enter into the investigation the attitude to 'cover up' develops which makes it very difficult if not impossible to get all the facts."



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What If Railroads Were Free?

What new or better services could they offer to improve traffic and revenues?



Says WARREN BROWN:

The emergence of the railway industry from its shell will be a revelation in transportation. It will present the basic problems of how to make free enterprise function in a new area and who can make it work. Possibly, you may be interested in knowing where we consider the responsibility will rest for triggering our responses to the lush field about to appear when the wraps are removed.

When there are no chains but a governing obligation to our security holders to pay a healthy profit, then the railway traffic departments will become a new power in transportation. They know where our glaring weaknesses lie and what we have to whip to get business back.

First comes the necessity for indoctrinating the traffic man with the fundamentals of a present and a potential cost structure. This is his background for solving existing problems and for being able to do what will be, to him, the very unusual challenge of selling on his feet. The education has to be a broad one because it will involve more than a specific rate versus a gross cost of operation between two points. It must embrace instruction in the practical aspects of making a railway system flexible enough to bend itself to every little thing about us that irks you.

In moving out ultimately to solve present problems and correct chronic complaints traffic administration must analyze a movement or a situation and decide what the railway must supply in the way of better services, special equipment, complete servicing, and a lower rate. The last is only part of the picture and should not be allowed to cloud our perspective.

This training and its pay-off in the form of solved current problems will permit our men to think on their

"Much has been said and written to shippers about the predicament of the railway industry and its attempts to function under obsolete legislation and obsolescent administration of those regulations," Warren W. Brown, president of the Chicago, Indianapolis & Louisville, told members of the Ohio Valley Transportation Advisory Board at their luncheon session at Louisville, September 10.

"Your tacit approval of what has been said, plus your practical experiences with the railway industry in some of its more cumbersome operations, convince me you subscribe to the theory that unregulated transportation would be good for you and for us, and that it would not affect the nation's economy adversely. . . .

"If I were in the industrial traffic field, I would be curious as to what might be expected after deregulation. Since I am representing a sectional railroad before a regional group I shall communicate my thoughts as applied to general railway problems."

feet and sell on their feet. There's nothing odd about this; industry thrives on it. The unfortunate aspect is that we are faced with such a complicated job of analysis and education—sort of training a cave man overnight in the principles of nuclear fission.

There should be enough leeway between unrestricted selling and unregulated operation to attract the capital that will let us do some of the following:

- On less-than-carload freight, one of your legitimate complaints is slow pick-up. The Monon and I are thinking in terms of more trucks and two-way radio. This amounts to a floating taxi service that will keep you from running into frustration and us into lost revenue when

"I want to call every shipper who has anything in a car which has been delayed."

a driver pulls up and finds he can't handle your shipment, or he breaks down somewhere and can't make your plant. Under today's conditions, the vise of control keeps us from affording that luxury in pick-up and delivery service. I don't want to get out of P&D; I'd like to improve it.

- Then you have the factor of prompt loading and the efficient forwarding of cars. At our new freight house in Hammond, we plan that no tonnage will ever touch the floor. Unloading from a truck must be followed by immediate loading into a freight car, and, conversely, there will always be trailers waiting for incoming freight. Again, this is a step forward, but not enough.

Here is where I would like to introduce the idea of immediate movement without waiting for tonnage to fill out a car. And I would like to see more than one

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We are interested in SYSTEM LUBRICATION as a means to cutting operating costs, increasing tonnage capacity, reducing "dry" steel wear, cutting derailments.

- ☐ We'd like to have your brochure giving us specific details and specifications.
- ☐ We'd like to see your "3-D" picture presentation.

Signed _____

Position _____

Railroad _____

Address _____

City _____ State _____



"THE MONON AND I are thinking in terms of more trucks and two-way radio. This will keep the shipper from running into frustration—and us into lost revenue—when a vehicle can't handle your shipment, or breaks down somewhere and can't make your plant."

class of l.c.l. service. Perhaps an arrangement where a shipment picked up after closing time of a merchandise car could be delivered the next morning, for, say, a slightly higher rate.

- We are thinking in terms of finding the funds to increase our supervisory forces to cut down mishandling and loss and damage claims.

If a shipment is damaged or lost in transit, I want enough flexibility to be able to telephone the shipper and ask for instructions. If a merchandise car is delayed by bad order, I want to call every shipper who has anything in the car and explain why his shipment will be late and how long. If he wants, we can call his customer for him. This means alert, high-class supervision. But today the money just doesn't exist.

- We're looking into the possibility of discontinuing intermediate transfer operations in order that anything which originates or terminates on the Monon as a less-than-carload shipment gets handled once—or twice if it both starts and ends on our railroad.

"Shippers should be free to bargain openly, brutally, and skillfully."

- I want more than one speed class of carload freight service at differential rates. I also think every railroad should indiscriminately distribute published freight schedules and make them work. This will take money in the enlargement of such things as the quantity of standby motive power. I'd like to triple ours.

- We wish to be able to telephone you when we're not going to make a schedule—sort of a floating train arrival board. Increased capital and the application of practical intelligence that doesn't have to run down a rule or a regulation would make this possible.

- We'd like to have empty cars in our yards on 24-hour availability.

Now, that one might sound fantastic, but we have to get ready for extremes, and a radical thought first assumed will temper us down into the practical changes that can be instantly put into operation.

- A mobile telephone service linking shippers and switch crews.

- Special freight equipment is a field that bothers me particularly. We have some custom hopper cars now in bulk flour service. I'd like to supplement these with freight units constructed for newsprint, others for limestone, others for merchandise. Perhaps all of them can't be used for reverse loading, but every specialized unit of equipment we place into service will cut our claim bill and give us that much more margin in which to provide one thing—good railway service. I'd like to see an improvement to the point that you don't order a box car or a hopper, but specify instead the type of commodity.

- The passenger business is very sick. Indicative of its irksome aspects is the fact that I can't add to the comfort of your trip with a free cocktail hour. Someone breathes down my neck charging "rebate," while I go through your plant and get a free box of chocolates if you're in the confectionery business or a free glass of beer if you run a brewery.

These plans may sound far-fetched, and possibly utterly ridiculous to some of you. But they are nothing more than other industries are giving to their customers, and they are able to make a profit on their investment. They make a product, merchandise it, and service the account. I don't see any reason why the railway industry can't fight its way to the same basis of complete efficiency.

Now, here's where the industrial traffic manager comes in—where industrial traffic also becomes a great new power in transportation. Shipper criticism and advisory boards are growing every day in point of power and as a healthy influence. You guide us, you advise us, you needle us. When regulation ends you will have increased opportunities for doing so because we will have run out of excuses. Instead of having to study rates and tariffs and I.C.C. decisions that might have set this precedent or that, you can contribute to the net income picture of your firm by invoking creative imagination to work on your entire transportation picture and then bargain openly, brutally and skillfully with the results of that study and the bait of your tonnage.

On the other hand, you must cooperate with us by

"I don't want to get out of P&D; I'd like to improve it."

"I want more than one speed class of carload freight service at differential rates."

understanding the need for cutting out unprofitable services. You must be willing to let us eliminate them or be prepared to pay the full cost we will have to incur in providing them.

Industries don't engage in losing operations. New things replace the old, and progress always wipes out sentimental preferences for an original model or an original type. Old models and original types are outmoded, obsolete, and you should expect to pay the heavy penalty American progress dictates must go hand-in-hand with decadent practices. The railroad industry must function that way or perish. If it doesn't, it won't even survive.

A final point: When the railroads ran wild, restrictions came. Some people fear that when the restrictions come off this time, we'll do the same thing again and there will be discrimination and all of the old evils. Not so. Industry polices and fair-trades itself; it's the only proper way of operation, and the railway industry can do as well.



"WE WISH to be able to telephone you when we're not going to make a schedule—a floating train arrival board."

If it doesn't, sue us. Take every railroad in the land to court and make them pay for the cost of making you go through that trouble, but please give us all a chance under free enterprise—some time under free enterprise.

Where Will the Gas Turbine Go?

(Continued from page 95)

With its 4,500-hp. power plant, the gas-turbine-electric will pull a 4,500-ton train on level track at 45 miles per hour. With its 8 motors and 260 tons, it can pull this same train up an 0.8 per cent grade within the continuous rating of the motors and at a practical adhesion value of about 18 per cent.

The savings resulting from operation with one unit rather than two or three are considerable, according to Mr. Wilson. For light road or switching service, the 4,500-hp. locomotive is naturally too large, so at present must be excluded from these applications. Perhaps in the future a gas-turbine-electric of approximately 2,500 hp. will combine with the large unit to give a gas-turbine-electric locomotive line which will much more fully cover the range of applications. The Union Pacific, at present, is using the gas-turbines and the diesels in joint pool service, with the turbines handling the base load of rather constant weight trains at maximum speed, and the diesels taking the light trains or the heavy drags.

Operating Cost

At present, the full load fuel rate of the gas-turbine-electric is about twice that of a 4,500-hp., 3-unit diesel-electric. This is counteracted by the lower unit cost of fuel it burns, Mr. Wilson said, but he added that an undesirable characteristic of the turbine is its poor fuel rate at loads less than full-load and at idle. At idle, the fuel rate is about 35 per cent of the full-load rate. This high idling and low-load rate limits the present economical application of the locomotive to runs where

it can operate at high load factors a large percentage of the time.

Many changes have been made to improve this situation, according to the report. It is possible now to hostle the locomotive, pump air, and make air tests and even switch a few cars, using the small diesel engine with the turbine shut down. Elimination of this low-load operation, and shutting down the turbine when idle periods greater than 30 minutes are expected, have materially helped the fuel cost picture. In addition, provision will be made on the new locomotives to obtain dynamic braking with the turbine shut down. This should eliminate much low-load down-hill turbine operation and further improve the fuel consumption picture.

More important reductions in fuel cost will depend on cheaper fuel or higher efficiency of the power plant.

Improvements Ahead

The biggest improvements in the 15 new locomotives over the first 10 are expected to show up in lower maintenance, better availability, and greater reliability. Some improvement will be gained in fuel economy but not a big improvement. The new design is expected to come closer to the power plant that can be lowered into a locomotive, buttoned up, and then left untouched for thousands of hours.

Ways will be found to consume a wider variety of Bunker C oil and to do this with a greatly extended life of the combustion system parts, said Mr. Wilson. This will be done at operating temperatures substantially higher than present temperatures. Unquestionably, in time, he added, a heat exchanger will be added which will improve the efficiency.



"THE MONON AND I are thinking in terms of more trucks and two-way radio. This will keep the shipper from running into frustration—and us into lost revenue—when a vehicle can't handle your shipment, or breaks down somewhere and can't make your plant."

class of l.c.l. service. Perhaps an arrangement where a shipment picked up after closing time of a merchandise car could be delivered the next morning, for, say, a slightly higher rate.

- We are thinking in terms of finding the funds to increase our supervisory forces to cut down mishandling and loss and damage claims.

If a shipment is damaged or lost in transit, I want enough flexibility to be able to telephone the shipper and ask for instructions. If a merchandise car is delayed by bad order, I want to call every shipper who has anything in the car and explain why his shipment will be late and how long. If he wants, we can call his customer for him. This means alert, high-class supervision. But today the money just doesn't exist.

- We're looking into the possibility of discontinuing intermediate transfer operations in order that anything which originates or terminates on the Monon as a less-than-carload shipment gets handled once—or twice if it both starts and ends on our railroad.

"Shippers should be free to bargain openly, brutally, and skillfully."

- I want more than one speed class of carload freight service at differential rates. I also think every railroad should indiscriminately distribute published freight schedules and make them work. This will take money in the enlargement of such things as the quantity of standby motive power. I'd like to triple ours.

- We wish to be able to telephone you when we're not going to make a schedule—sort of a floating train arrival board. Increased capital and the application of practical intelligence that doesn't have to run down a rule or a regulation would make this possible.

- We'd like to have empty cars in our yards on 24-hour availability.

Now, that one might sound fantastic, but we have to get ready for extremes, and a radical thought first assumed will temper us down into the practical changes that can be instantly put into operation.

- A mobile telephone service linking shippers and switch crews.

- Special freight equipment is a field that bothers me particularly. We have some custom hopper cars now in bulk flour service. I'd like to supplement these with freight units constructed for newsprint, others for limestone, others for merchandise. Perhaps all of them can't be used for reverse loading, but every specialized unit of equipment we place into service will cut our claim bill and give us that much more margin in which to provide one thing—good railway service. I'd like to see an improvement to the point that you don't order a box car or a hopper, but specify instead the type of commodity.

- The passenger business is very sick. Indicative of its irksome aspects is the fact that I can't add to the comfort of your trip with a free cocktail hour. Someone breathes down my neck charging "rebate," while I go through your plant and get a free box of chocolates if you're in the confectionery business or a free glass of beer if you run a brewery.

These plans may sound far-fetched, and possibly utterly ridiculous to some of you. But they are nothing more than other industries are giving to their customers, and they are able to make a profit on their investment. They make a product, merchandise it, and service the account. I don't see any reason why the railway industry can't fight its way to the same basis of complete efficiency.

Now, here's where the industrial traffic manager comes in—where industrial traffic also becomes a great new power in transportation. Shipper criticism and advisory boards are growing every day in point of power and as a healthy influence. You guide us, you advise us, you needle us. When regulation ends you will have increased opportunities for doing so because we will have run out of excuses. Instead of having to study rates and tariffs and I.C.C. decisions that might have set this precedent or that, you can contribute to the net income picture of your firm by invoking creative imagination to work on your entire transportation picture and then bargain openly, brutally and skillfully with the results of that study and the bait of your tonnage.

On the other hand, you must cooperate with us by

"I don't want to get out of P&D; I'd like to improve it."

"I want more than one speed class of carload freight service at differential rates."

understanding the need for cutting out unprofitable services. You must be willing to let us eliminate them or be prepared to pay the full cost we will have to incur in providing them.

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CANADA TO URUGUAY—Railroaders from far places came to inspect the exhibition at the Coliseum. Left to right—Charles Element, roadmaster, Canadian National, Victoriaville, Que.; W. Blackburn, roadmaster, CNR, Chambord, Que.; D. W. Blair, district engineer, CNR, Toronto, Ont.; Joseph Giles, Caterpillar Tractor Company; Francisco D. Tourreilles, Uruguayan Railroad, Montevideo, Uruguay; Thomas V. Shea, Athey Products Corporation; W. J. Carson, Hewitt Equipment, Ltd., Montreal, Que.



OPENING DAY at the exhibition sponsored by the two supply associations found many visiting railroad men inspecting the displays which filled the entire Coliseum. Shown here, left to right, are R. K. Pattison, assistant division engineer, New York Central; H. L. Riser, assistant to general purchasing agent, NYC; R. I. Renfrew, general passenger agent, NYC; M. H. Frank, W. Bingham Company; F. J. Loughlin, purchasing agent, Erie; J. H. Hines, Hubbard & Co.

CHICAGO MEETINGS PLACE . . .

M/W Supervisors in Spotlight

Qualifications, opportunities and responsibilities emphasized by executives at conventions of Roadmasters' and Bridge & Building Associations

"Boss, give me plenty of rock and plenty of wood and just get out of my way." This remark, a favorite expression of a roadmaster, was quoted by H. J. McKenzie, president of the Cotton Belt, in an address at a joint session of the conventions of the Roadmasters' and Maintenance of Way Association and the Bridge and Building Association at the Conrad Hilton Hotel in Chicago last week. The comment was quoted by Mr. McKenzie to illustrate his point that most maintenance-of-way supervisors today have a keen sense of humor, "and if it wasn't for this fact I imagine there would be more ulcers and high blood pressure than actually exist among them."

A factor in helping to promote attendance at the meetings was the display of manufacturers' products that was on exhibit at Chicago's Coliseum during the week—a display so large it occupied every available bit of exhibit space in the mammoth building. The exhibition was sponsored by the Track Supply Association and the Bridge and Building Supply Association. The presence of the exhibit was one reason why 13 committees of the American Railway Engineering Association scheduled meetings to be held at Chicago last week.

The quotation was also appropriate for another reason; it typifies the attitude of loyalty and enthusiasm which maintenance-of-way and -structures supervisors have towards their work and responsibilities—an attitude which the observer could see on every hand as the track and bridge and building supervisors grappled with their current difficulties during the three-day sessions. Another evidence of this enthusiasm was the record attendance at the two meetings. A total of 1,364 persons registered at the two conventions, including 1,071 railroad men and 293 supply company representatives and other non-railroad guests.

The two conventions got under way on Tuesday morning, September 15, in a joint session. Thereafter, until adjournment Thursday noon, the two associations held separate sessions.

The qualifications, training and responsibilities of railroad supervisory officers came in for a good deal of attention in the principal addresses delivered at the meeting. Not only did Mr. McKenzie and Mr. May dwell on this subject at some length but it also cropped up in the addresses by Mr. Spofford and Mr. Gilkey at the opening sessions of their separate meetings. Pertinent excerpts from these addresses follow:

(Continued on page 109)

What the
NEW YORK AIR BRAKE CO.
Type "B"
BRAKE PIPE
FLOW INDICATOR



Can Tell You...

That something has happened to change radically the normal equilibrium of brake pipe pressure in a charged brake system. *This can mean that:*

- The conductor is making a brake application.
- The train has broken in two.
- The brake pipe leakage has increased.

OR

It Can Tell You

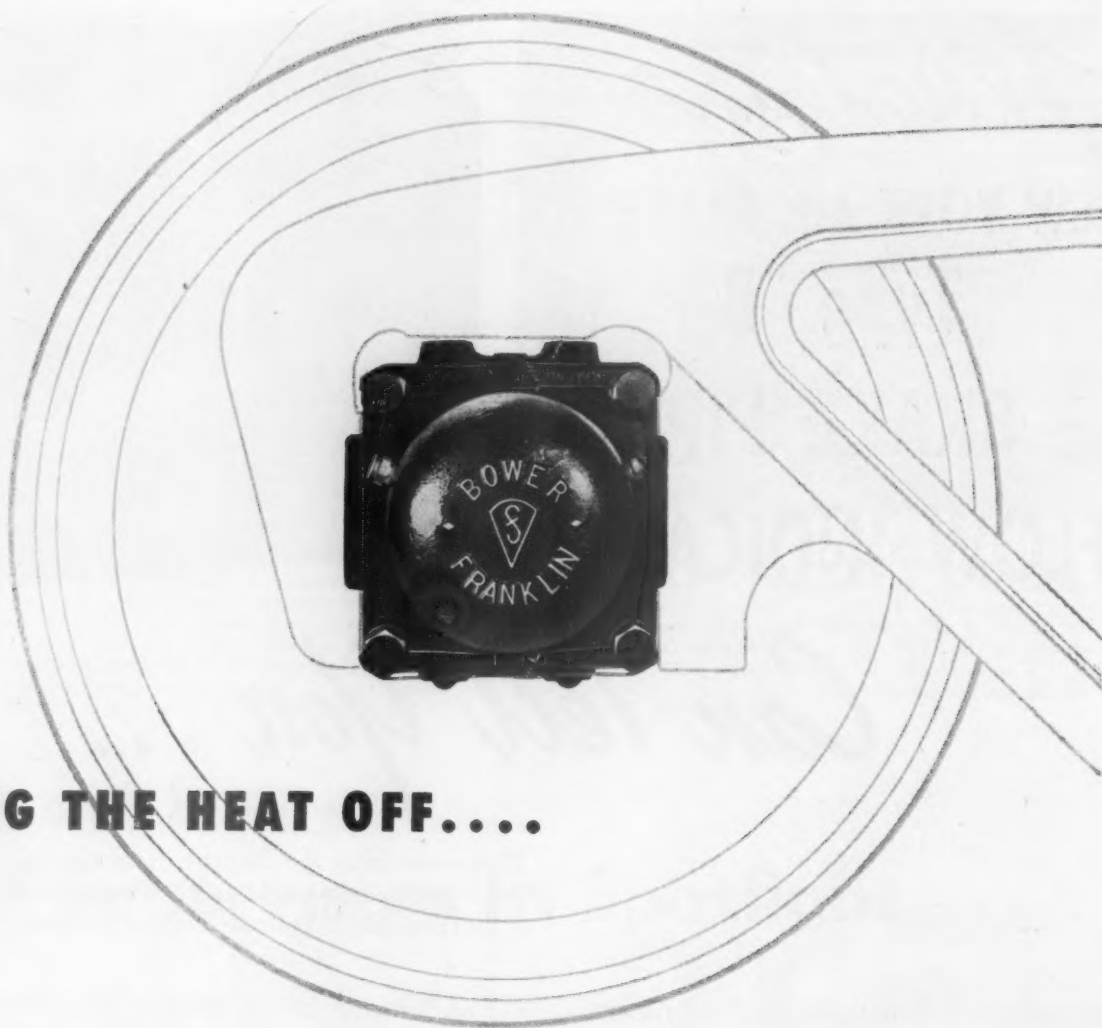
That flow into the brake pipe of newly made-up trains is excessive. *This can mean that:*

- The train system leakage is excessive.
- The brake test can not be made.

Mounted in the locomotive cab. Available for operation on 32 volts or 64 volts. *Write for complete information.*

The New York Air Brake Company

230 Park Ave., New York 17, N. Y.



TAKING THE HEAT OFF....

Bower-Franklin journal boxes, equipped with dependable Bower straight roller bearings, are ready to help you carry more freight — at greater speeds — with no danger of hot boxes.

These high-quality bearings have already *proved* themselves in numerous other types of heavy-duty equipment — steel rolling mills, heavy trucks, earthmovers, cranes, shovels, and railroad generator-drive units, to mention but a few.

Sales and application engineering for the Bower-Franklin journal boxes are being handled by the Franklin Balmar Corporation. Additional information will be furnished on request.



FRANKLIN BALMAR CORPORATION
WOODBERRY, BALTIMORE 11, MARYLAND
CHICAGO OFFICE: 5001 North Wolcott Ave., Chicago 40

Direction of the joint session was shared by the presidents of the two associations—for the Bridge and Building men, Foster R. Spofford, assistant to chief engineer of the Boston & Maine, Boston; and for the Roadmasters, R. H. Gilkey, division engineer of the Central of Georgia, Savannah, Ga. Principal speakers at the opening session were Mr. McKenzie and R. G. May, vice-president, Operations and Maintenance department, Association of American Railroads. Brief words of greeting were also heard at the joint opening session on behalf of the American Railway Engineering Association by its senior vice-president, G. W. Miller, engineer maintenance-of-way of the Canadian Pacific, Toronto; the Track Supply Association by President R. W. Torbert (Oxweld Railroad Service Company); and the Bridge and Building Supply Association by President R. R. Clegg (American Lumber & Treating Co.). Lewis Thomas (Q & C Co.), secretary of the Track Supply Association, and director of exhibits for both of the supply associations, also spoke briefly.



R. G. May

TRAINING PROGRAMS HELPFUL

"Many of the railroads have subscribed to supervisors' training programs, management training programs carried out by universities throughout the country, seminars of supervisors conducted by officers of the railroads, and special courses of instruction. The benefits derived from such courses cannot be estimated. The specific objectives of any program are:

- (1) To establish a clear picture of duties and responsibilities of supervisors.
- (2) To develop both good public relations outside the company and consider human relations problems within the employee ranks.
- (3) To use the thinking and experience of all.
- (4) To determine action to be taken.
- (5) To provide opportunity for getting group recommendations.
- (6) To keep the supervision informed of better methods.

"Such programs are long range in nature and are good insurance that the railroad industry will hold its rightful place in a competitive market for service and talent."

F. R. Spofford



HAVE ALL THE ANSWERS

"We are still faced with rising costs of labor and materials. This keeps before us the major problem of keeping maintenance costs to a minimum. We must constantly review our methods of using labor and our applications of materials to be sure that we are currently obtaining the essential result—a structure with a minimum annual cost.

"It may well be said that a large part of all of these problems is the responsibility of the designer. That is true, but it is only a half truth. No designer can hope to achieve the proper result without the criticism, both destructive and constructive, and the advice of the supervisor. He is the only man in the railroad organization who has all the answers in his hands. He alone knows the minor changes in construction which can save or cost money. He alone knows the effect of time, of the elements and of wear and tear upon a structure.

"The supervisor is then the essential man in a railroad organization if truly economic construction and maintenance is to be obtained.

"Our every effort to apply in our work what we have learned, to advise our management and designers as to results of our own experience and that of others, and the development with the supply industry of better equipment and materials, must be extended on every occasion. A failure on our part to achieve such an economic result will place a dangerous burden upon our individual railroads and the industry as a whole."

H. J. McKenzie



BACKBONE OF MANAGEMENT

"It is most difficult to draw a fine line that would separate management from supervisors for, in the last




you can't expect
BIG-CHECK BUSINESS
on bare-top tables

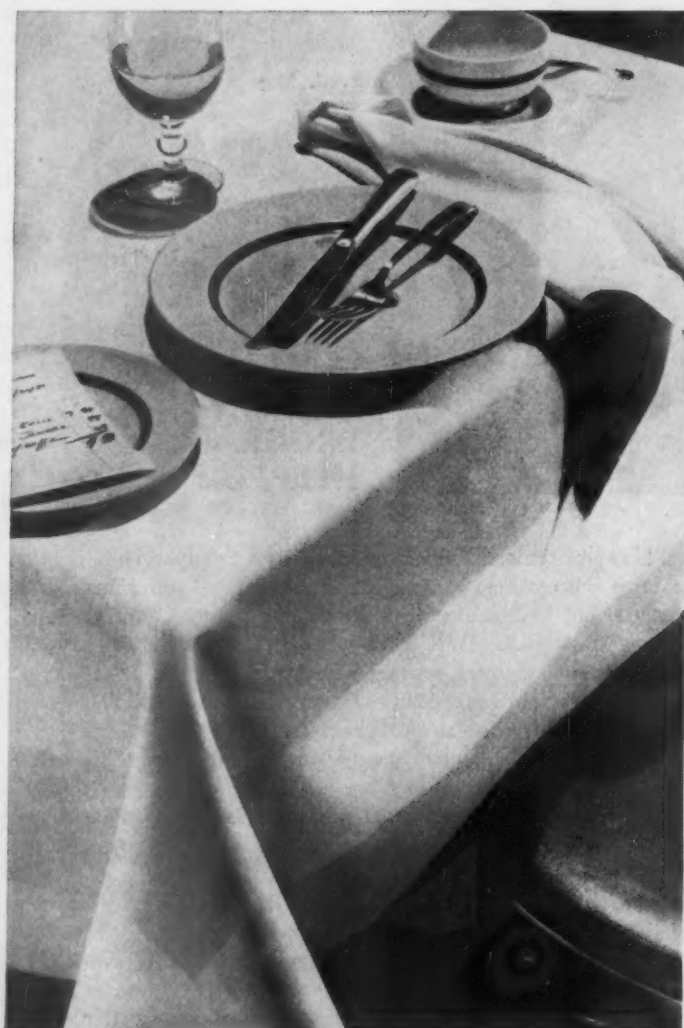
NAPERY

CAN MAKE THE DIFFERENCE

- Quiet Atmosphere
- Inviting Appearance
- Better Sanitation
- Greater Protection From Spillage

Simtex Napery stays
 gleaming white and
 fresh longer, thanks to
 the exclusive Basco finish.

 **Simtex**



SIMTEX MILLS, Division of Simmons Company, 40 WORTH STREET, NEW YORK 13, N. Y.

SIMTEX COVERS MORE TABLES THAN ANY OTHER MAKER IN AMERICA

analysis, our supervisors are the backbone of management. A good supervisor is actually a little general manager on his district and should consider his job in that light. He should assume the responsibilities and direct the affairs coming under his supervision in the same manner that a superintendent would for his division or a general manager for the entire railroad.

"The most important thing that management expects of the supervisor is 'to get the job done'—not just to do it 'any old way,' but to do it efficiently, safely, economically, as well as expeditiously. They expect him to carry out specific instructions when he has them, and, when he doesn't, to handle the work in accordance with standard practices and policies and to the best of his ability.

"Management expects the supervisor to maintain the proper relations with officers and other supervisors in his department, as well as with other departments of the railroad. They want the supervisor to use good human relations in his contacts with his subordinates. He should maintain good public relations with the patrons of the railroad and with the community in which he resides. He *must* be able to get along with people, and right here I would like to say that I don't know of any more important requirement for a supervisor or an officer, than 'getting along with people'."

"Management expects supervisors to be resourceful and to find ways and means of getting the job done when allowances for expenditures are low. They expect the supervisors to think in terms of mechanization and to get away from the old idea of 'let me have another 50 or 100 men to do the job.' They want to find ways and means of doing a job on a more permanent basis and at less cost. This is most necessary if we are to meet our competition in the transportation field today."



R. H. Gilkey

MUST POSSESS LEADERSHIP

"The future of our personnel lies with the younger men. The railroad today represents a combination of skills, sciences and crafts in order that many different types of machines and mechanisms can perform efficiently. For this reason alone we must seek men who understand such different skills in railroad engineering. It is, therefore, natural that the supervisor element be selected from men who have shown knowledge of such techniques and who possess leadership. But once a man is selected as a supervisor his responsibility increases and, as he moves up the ladder, this man becomes more valuable to his railroad.

"He must also possess leadership and know how to delegate authority and what authority to delegate. This is necessary in order that the work will be carried on efficiently and effectively. Young men who are hired to work on a railroad should be encouraged to improve their education along railroad lines, and then the railroad would be more able to hold these men. This will tend to encourage men of high caliber to stay in the railroad business. Our top railroad officers should take an interest and support such education so that when they retire they will thus be able to leave qualified successors. Our railroads are among the top industries of this nation, so let us keep them that way."

BUSINESS SESSIONS

The separate sessions of the Roadmasters' meeting were devoted principally to the presentation and consideration of six committee reports on current problems. Two addresses were also heard by this group—one on What About the Section Foreman Problem?, by W.M.S. Dunn, general roadmaster of the Nickel Plate, Bellevue, Ohio; and the other on Preventive Planning, by Donald E. Mumford, manager safety, New York Central System, New York.

In addition to the presentation of seven committee reports, the Bridge and Building sessions included the showing of a color motion picture depicting progress of tests conducted by the Santa Fe in an effort to find suitable means of fireproofing treated timber trestles. The showing of this picture was accompanied by a commentary by C. H. Sandberg, assistant bridge engineer of the Santa Fe.

In the election of officers in the Roadmasters' Association, H. W. Kellogg, engineer of track, Chesapeake & Ohio, Detroit, was advanced from second vice-president to president; R. G. Simmons, general roadmaster, Milwaukee, Chicago, was elected first vice-president; and W. M. S. Dunn, general roadmaster, Nickel Plate, Bellevue, Ohio, was elected second vice-president. New directors are R. R. Manion, engineer maintenance of way, Great Northern, St. Paul, and G. B. McClellen, general roadmaster, Texas & Pacific, Ft. Worth, Tex. T. E. Crowley, division engineer, Delaware & Hudson, was reelected treasurer.

In the Bridge & Building Association, Lee Mayfield, resident engineer, Missouri Pacific Lines, Houston, Tex., was advanced from first vice-president to president; H. M. Harlow, assistant general supervisor bridges and buildings, C&O, Richmond, Va., moved up from second vice-president to first vice-president; J. A. Jorlett, assistant engineer bridges and buildings, Pennsylvania, New York, was advanced from third vice-president to second vice-president; R. R. Gunderson, assistant bridge engineer, Southern, Washington, D. C., was promoted from fourth vice-president to third vice-president, and W. H. Huffman, assistant to chief engineer, Chicago & North Western, Chicago, was elected fourth vice-president. Directors elected are B. M. Stephens, assistant chief engineer, Southern Pacific Lines, Houston; W. H. Bunge, assistant engineer, Missouri Pacific Lines, Houston; and E. R. Schlaf, assistant superintendent water service, Illinois Central, Chicago. L. C. Winkelhaus, architectural engineer, C&NW, Chicago, was reelected treasurer.



Pyrene Air Foam Equipment has extinguished more major oil fires throughout the world than any other air foam equipment. This is an earned reputation that you can rely on in considering your own protection.

THERE'S A PYRENE FOR EVERY R.R. FIRE HAZARD!

PYRENE PROTECTS RAILROADS 4 WAYS

- 1. Oil storage tank protection** with Pyrene fire-fighting systems. Manual or automatic types with capacities of hundreds up to thousands of gallons of foam per minute.
- 2. Diesel engine protection** with the self-contained, small space Pyrene* air foam unit. The 100 gal. unit discharges 1750 gal. of fire-killing air foam at the rate of 350 gal. per minute. Sufficient for almost any conceivable emergency.
- 3. Diesel repair shop protection** with Pyrene Proportioning Tanks. One tank (it can be installed in an out-of-the-way spot) can supply up to 1000 gal. of foam a minute to one or more Pyrene Foam Playpipes at any required locations.
- 4. General protection** for rolling stock, buildings and automotive vehicles with Pyrene Fire Extinguishers and wheeled units of various types.

NOTE: The A.A.R. recently recommended that stationary foam systems

be installed in all units in addition to portable equipment.

WRITE FOR PYRENE'S RAILROAD FIRE PROTECTION FOLDER
Detailed information about the wide range of Pyrene equipment to protect heavy railroad capital investments.



PYRENE MANUFACTURING COMPANY

678 Belmont Avenue • Newark 8, N.J.

Affiliated with C-O-Two Fire Equipment Co.

*T.M. Reg. U.S. Pat. Off.

New Facilities

(Continued from page 18)

ft. siding and two industrial turnouts are being built to serve the Ford Motor Company at Strawberry, Ky., near Louisville (\$69,050). Bridge No. 3 at M.P. 138 at Atkinson, Ky., is being replaced with a steel girder span and new timber trestle approaches (\$28,455). At Pelham, Ala., joint trackage and an interlocking plant with the Atlantic Coast Line is being built (\$52,555).

Northwestern Pacific.—Extension of sidings at Bailhache, Cal., Longvale, Spyrock and Fort Seward, in lengths varying from 800 to 1,670 feet, is being undertaken at a total cost of \$52,553. Two additional yard tracks, 3,130 and 3,315 feet long, respectively, are being constructed at Eureka (\$46,264). At M.P. 251, 252 feet of open-deck trestle is being repaired (\$18,865). At Black Point, drawbridge protection work is being repaired (\$15,910). During the current season, 13.89 miles of light rail are being replaced with heavier rail (\$87,020). All work is being performed by company forces.

Texas & Pacific.—The Quisle Construction Company, Fort Worth, Tex., is building a 50-ft. by 300-ft. extension to the Fort Worth pool car dock, to be completed about the first of the year, at an estimated cost of \$162,000. The station at Atlanta, Tex., is being remodeled and modernized by the Wm. S. James, Jr., Construction Company of Texarkana, at a cost of \$54,000.

Financial

Chicago, Milwaukee, St. Paul & Pacific.—*Line to Be Sold.*—Preliminary agreements have been reached between the Milwaukee and the Chicago Transit Authority for sale to the authority of the Milwaukee's former Evanston-Wilmette suburban line. The line, which extends from Wilson Avenue, on Chicago's north side, through Evanston to a passenger terminal at Linden avenue, Wilmette—8.58 miles—is largely on elevated fill, with double or quadruple track. It has not been operated by the Milwaukee since 1907, when it was leased to form part of Chicago's elevated rapid transit system. The line is used also by trains of the Chicago North Shore & Milwaukee and it is expected that local freight service, presently operated by the Transit Authority through interchange with the Milwaukee at Buena Park yard, will be operated by the North Shore after the sale is completed.

The purchase price is \$7 million. The C.T.A. will meet it through is-

suance of 25-year 4½ per cent revenue bonds.

Hartford & Slocumb.—Acquisition.—This newly organized Alabama company has applied to the I.C.C. for authority to acquire, from the Central of Georgia, a 20-mile line between Dothan, Ala., and Hartford. The acquisition price would be \$75,000, which the H&S proposes to raise through sale at par (\$100) of 750 shares of common stock. Its financing plan also contemplates that \$25,000 for working capital would be borrowed on promissory notes, "possibly" secured by a mortgage. Operation of the line has been unprofitable for the Central, but the application said profitable operations would result from the conversion to a locally owned short line.

Inland Waterways Corporation.—*Transfer of Operating Rights.*—The I.C.C. last week gave temporary approval to transfer of operating rights from the government owned I.W.C. to Federal Barge Lines, a private company. The latter company purchased the I.W.C. for \$9,000,000 (*Railway Age*, August 3, page 9).

Temporary approval by the I.C.C. is for a period of 180 days. It permits the new owner to take over operation of I.W.C. facilities pending final determination by the commission. The I.C.C. said this grant of temporary authority does not create a "presumption" of what the final determination will be.

Federal Barge Lines is a new name adopted by the purchaser of I.W.C. When the purchase was announced last July, the purchasing firm was designated as Federal Waterways Corporation.

Maine Central.—Trackage Rights.—This road has asked the I.C.C. for authority to pay more for its use of Canadian National trackage between Groveton, N.H., and Stratford. Rental would be increased from \$1.65 to \$2.00 a train-mile, retroactive to November 1, 1951. The CN has asked for the increase to offset higher labor and material costs. The MC began using the 12.7-mile segment of CN trackage in August 1948.

Terminal Railroad Association of St. Louis.—Acquisition.—This association has applied to the I.C.C. for authority to acquire direct ownership of facilities now held by six subsidiary companies. The association said liquidation of the separate subsidiaries would result in savings in taxes, book-keeping and other expenses. It said this move is a step in a "broad program" aimed at simplification of the association's corporate structure.

The association itself is controlled by 15 line-haul railroads operating into St. Louis. It has performed all operations over lines of the subsidiaries, and no change in operations or service is now contemplated.

Subsidiary companies to be dissolved

Why chance it . . . when you have this proof?

Tests have shown that ties pressure-treated with Coal-Tar Creosote or its solutions have average life of over 30 years.



BARRETT COAL-TAR CREOSOTE is your BEST BUY for PROVED PROTECTION

Three of the world's most widely used wood products — electric line poles, railroad ties, and piling are today regularly protected by COAL-TAR CREOSOTE. Time and experience have proved that it pays to preserve with coal-tar creosote because only coal-tar creosote gives you all these advantages:

- Proved by over 100 years in use.
- Defies rot, insects, marine borers.
- Does not react with wood to impair strength.
- Weather-proved in every climate.
- Retards checking and brooming.

No other wood preservative offers such lasting protection. Don't take chances... Specify wood pressure-treated with Barrett Coal-Tar Creosote for proved protection!



•Reg. U. S. Pat. Off.

BARRETT DIVISION



ALLIED CHEMICAL & DYE CORPORATION
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are the Terminal Railroad of East St. Louis, Granite City & Madison Belt Line, St. Louis Belt & Terminal, Illinois Transfer, East St. Louis & Carondelet, and East St. Louis Belt Railroad.

Securities

Western Maryland.—Dividend on First Preferred Stock.—Directors of the WM have declared a \$2.50 dividend on the company's first preferred stock,

payable September 30 to holders of record September 21. Declaration of this dividend is in line with an application now pending before the I.C.C. for authority to modify the WM's capital structure so as to eliminate dividend arrearages of \$126 per share on the present 7% first preferred. Under this application, each share of \$100-par 7% cumulative first preferred stock would be exchanged for two shares of new 5% first preferred, one-half share of new 4% second preferred, and \$10 in cash. The \$2.50 dividend, while declared on the present first preferred, is designated as the first quarterly dividend of \$1.25 a share on the pro-

posed new 5% first preferred for the quarter ending September 30. That stock, if authorized to be issued, will be dated July 1, 1953.

Application

NEW YORK CENTRAL.—To issue \$800,000 in promissory notes to the Bethlehem Steel Company in partial payment for 16 covered freight barges. The barges, costing an estimated \$66,900 each, would be used by Central in handling freight traffic at the port of New York. Each of the notes would be payable in 20 quarterly installments. They would bear interest at 3¾ per cent.

Dividends Declared

MAHONING COAL.—\$12.50, payable October 1 to holders of record September 21.

NEW YORK, NEW HAVEN & HARTFORD.—5% preferred A, \$2, on arrears, payable October 2 to holders of record September 18.

PIEDMONT & NORTHERN.—\$1, quarterly, payable October 20 to holders of record October 5.

PITTSBURGH & LAKE ERIE.—\$1.50, quarterly, payable October 15 to holders of record September 18.

SOUTHERN.—M&O Stock Trust, \$2, semiannual, payable October 1 to holders of record September 15.

WESTERN MARYLAND.—1st preferred, \$2.50, payable September 30 to holders of record September 21.

Security Price Averages

	Sept. 15	Prev. Week	Last Year
Average price of 20 representative railway stocks	57.43	59.34	61.68
Average price of 20 representative railway bonds	89.14	89.74	92.78

NO

**SUBSTITUTE OR IMITATION
CAN MATCH THE QUALITY
OF GENUINE "MINK"**

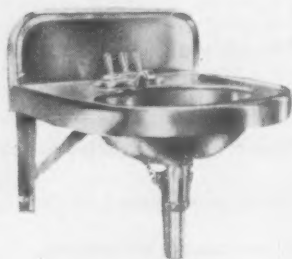
When you buy Mink you are assured of a product with distinctive features that cannot be imitated.

MINK'S railroad products have been created and engineered, exclusively for the railroad field by men experienced and familiar with these requirements.

MINK'S engineers have the "know how" and ability to produce such products that will withstand the wear and tear expected by railroad men.



MODEL NO. 17
WATER COOLER
WITH FOOD
COMPARTMENT



MODEL NO. 1080
STAINLESS STEEL
LAVATORY

**BUY RAILROAD
PRODUCTS
DEVELOPED FOR
THE RAILROADS
BY**

**E. W. MINK
& Associates, Inc.**

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*Hotel Cleveland offers a
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... convenient, too ... directly
connected with
Union Passenger Terminal.*

*Hotel
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CLEVELAND, OHIO

OTHER SONNABEND OPERATED HOTELS
CHICAGO, Edgewater Beach Hotel
BOSTON, The Somerset, The Shelton
NEW YORK CITY, Ritz Tower
RESORTS
Whitehall, Palm Beach, Fla.
Samoset, Rockland, Me.



Railway Officers

EXECUTIVE

John W. Devins, vice-president and general manager of the MINNEAPOLIS & ST. LOUIS at Minneapolis, has been promoted to the newly created position of executive vice-president (*Railway Age*, September 14). Mr.



John W. Devins

Devins has been in charge of the operating department since 1934, when he held the position of chief operating officer for receivers. He was named vice-president and general manager in 1943, and will continue in charge of the operating department in his new capacity.

OPERATING

W. E. Eastman, assistant division superintendent of the SOUTHERN PACIFIC at Oakland Pier, Cal., has been promoted to division superintendent at Bakersfield, Cal., succeeding **D. P. Boykin**, who has been transferred to



W. E. Eastman

Ogden, Utah, to replace **F. E. Kalbaugh**. **W. H. Ferguson**, assistant division superintendent at Stockton, Cal., has been named to succeed Mr. Eastman, while **N. B. Eddlestone**,

trainmaster, replaces Mr. Ferguson. **L. E. Hoyt**, trainmaster at Merced, Cal., transfers to succeed Mr. Eddlestone.

Mr. Eastman joined SP as a brakeman, later becoming assistant trainmaster, trainmaster, terminal superintendent and, in 1946, assistant superintendent.

FINANCIAL, LEGAL & ACCOUNTING

G. T. Bennett has been appointed auditor property accounts of the GULF, MOBILE & OHIO at Mobile, Ala., and will assume duties heretofore performed

by **T. C. Schley**, assistant to vice-president, who has been assigned to special duties. **T. C. Adams** has been appointed assistant auditor passenger and station accounts.

M. D. Shanahan, tax agent of the BURLINGTON at Chicago has been named land and tax agent of that railroad, as well as of the COLORADO & SOUTHERN, at Denver.

TRAFFIC

W. H. Rogers has been appointed general agent of the CHICAGO & EAST-

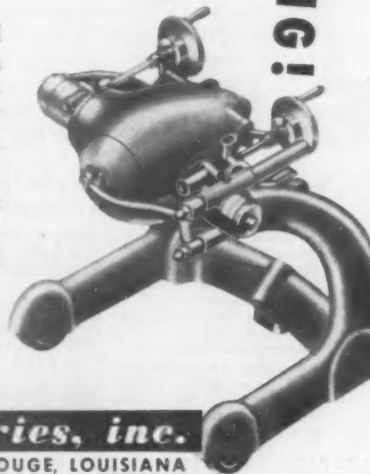


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ATOMIC ENERGY TESTING!

Lets You See Inside of Your: Locomotive Frames, Wheels, Tires, Siderods, Piston Rods, Water Jackets, Cross-heads, Guides, Draw Bars, Car Wheels, Journals, Traction Motor Cables, Truck Sides, Couplers, and other potential trouble spots.

Bringing one of the first industrial benefits of atomic energy, the Gamma Ray Machine radiographs 2% Sensitivity or better through as much as 8" of solid steel to give you true inspection for flaws. The machine is powered with Radioisotopes from the atomic pile. It gives safe non-destructive testing never before offered in any machine at any price. Portable, economical.



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DURABILITY, low-upkeep and convenience of custom construction are just a few of the advantages of fir plywood cabinets and fixtures.

Plywood helps you build faster—at lower in-place costs. Large panels speed work, simplify framing. Low cost fir plywood is easy to work with ordinary tools . . . won't chip, split or puncture. Easy to finish, too. It's factory-seasoned, dimensionally stable, true in size. For Basic Plywood Catalog or other data, write Douglas Fir Plywood Association, Tacoma 2, Washington.

Fir Plywood

Industry trademarks are your guide, guard and assurance of DFPA quality-tested plywood

Fir plywood is made in two types: 1. Interior-type for indoor and structural uses; 2. Exterior-type for uses exposed to water or weather. EXT-DFPA on panel edge means 100% waterproof glue. Grades within each type meet exact use needs.

PlyPanel is the versatile "one-side" grade of Interior-type. Use it for cabinets, lockers, other indoor jobs where only one side of the panel will be in view.

EXT-DFPA

INTERIOR FIR PLYWOOD
PLY PANEL
DFPA INSPECTED

SPECIFY DFPA-INSPECTED PLYWOOD

ERN ILLINOIS at Boston, succeeding **R. A. Wogan**, retired. The position of assistant general agent at Boston has been abolished.

A. F. Hatcher, assistant general freight agent of the ROCK ISLAND at Dallas, Tex., has been named acting fuel traffic manager at Chicago, succeeding **A. G. Vogel**, on leave of absence. **L. R. Ragot**, district freight and passenger agent at Rock Island, Ill., has been appointed acting assistant general freight agent to succeed Mr. Hatcher. Mr. Ragot has been replaced by **J. E. Edwards**, traveling freight agent at Davenport, Iowa. **T. V. Helmcamp**, general agent at El Paso, Tex., has been appointed division freight agent at Fort Worth, and has been succeeded by **D. C. Peters**, traveling freight agent at El Paso.

Gene P. Aloisio has been named freight traffic agent of the MONON at Chicago, succeeding **Joseph T. Hickey**, promoted elsewhere. **Marion W. Gumm** has been appointed industrial agent at Chicago.

MECHANICAL

R. M. Mochrie, assistant superintendent car equipment of the CANADIAN PACIFIC, at Winnipeg, has retired and has been succeeded by **Fred Woolley**, general car foreman at Moose Jaw, Sask.

SPECIAL

Benjamin Miller has joined the public relations staff of the ASSOCIATION OF AMERICAN RAILROADS as special representative. Mr. Miller was recently released from the Army after three years of service as a public relations officer.

Edwin F. Gahan has been appointed public relations representative of the CHESAPEAKE & OHIO at Richmond, Va. Mr. Gahan, who was formerly associated with the New York Times, has been with the C&O since March 1 as staff assistant at Cleveland.

W. J. Gordon Strachan, traveling representative (public relations) of the SANTA FE at Los Angeles, has been named special representative at Chicago, succeeding **William C. Burk**, who has been transferred to Topeka, Kan.

OBITUARY

Robert J. Rouse, who retired as purchasing agent of the RICHMOND, FREDERICKSBURG & POTOMAC in 1947, died at his home in Montgomery, Ala., September 4.

T. J. Murphy, 78, who was assistant to purchasing agent of the BALTIMORE & OHIO at Baltimore from 1916 to 1946, died September 7.

Complete loudspeaker paging and two-way communicating systems for classification yards, terminal facilities, mail and baggage handling facilities, passenger stations, freight stations, engine houses, interlocking towers, car checking service, and for Dispatcher's and other low level telephone type line applications.

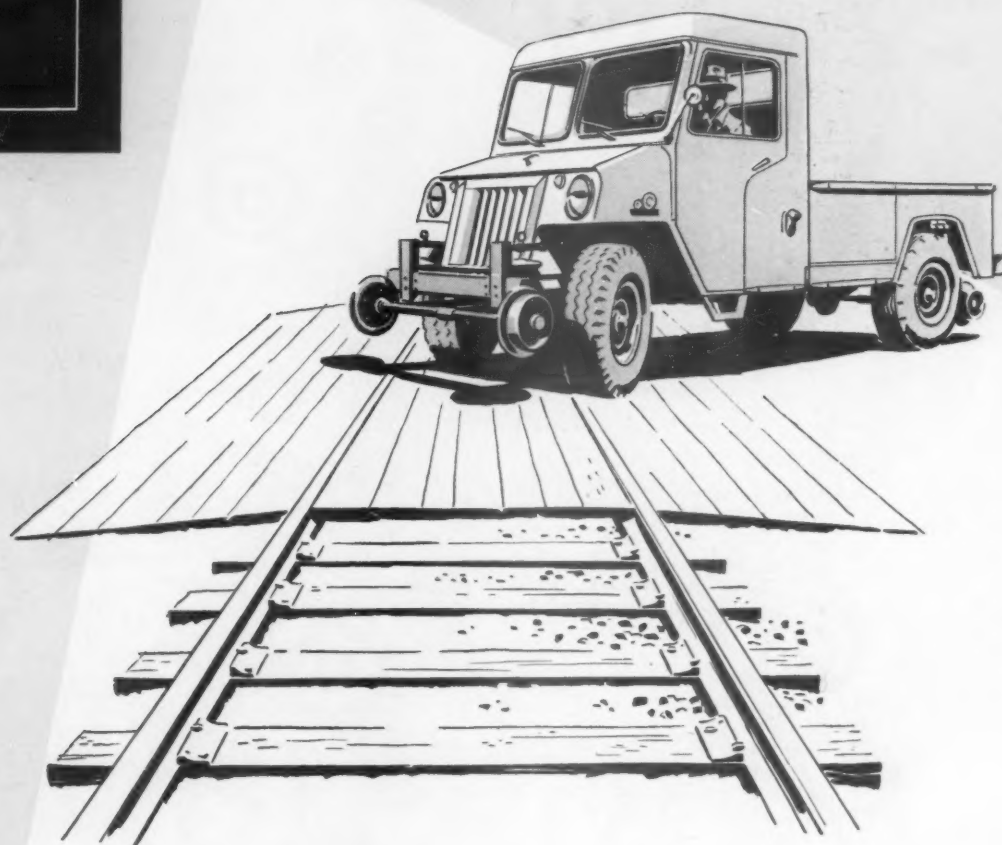
- Control consoles
 - Direct two-way communicating equipment
 - Low level line two-way communicating equipment
 - Intercommunicating systems
 - Paging systems
- Portable sound systems
 - Pre-amplifiers
 - Power amplifiers
 - Way station amplifiers
 - Dispatcher's transmitter and receiver units
- Telephone line concentration units
 - Telephone line monitoring units
 - Remotely controlled systems
 - Automatic volume level compensating units
 - Time and emergency signal devices
- Microphones
 - Loudspeakers
 - Weatherproof control units
 - Switch and jack box assemblies
 - Equipment cabinets
- Power supply units
 - Relays—switches—transformers
 - Speech frequency band-pass filters
 - Wire—cable
 - Control equipment for special applications
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Performance
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COUNTS

The watchword is—progress!

In engineering, in design and in craftsmanship, Fairmont is constantly moving ahead in the search for better, faster and more economical means of maintaining the world's railways. The inspiration, the goal and the watchword of those who design and build for Fairmont is one and the same—*progress!* In the main, Fairmont progress consists of the meticulous improvement and betterment of every single detail of every Fairmont product. But occasionally, Fairmont achieves a truly *dramatic* advancement in maintenance equipment. Such is the case with the Fairmont Hy-Rail car—a vehicle that travels with equal ease on both track and road, thereby elim-

inating costly and time-consuming change-overs of men and material. When on the road, the car travels as an ordinary highway vehicle—and when on the track, guide wheels position the car while the pneumatic tires carry the load. The latest version of the Fairmont Hy-Rail car is the A32 Series A, illustrated above. It features a rugged, dependable engine, a four-wheel drive, four-wheel braking, a fully enclosed cab and a "T" shaped pick-up box. Although only recently put into service, the A32 Series A Hy-Rail car has already established itself as an asset to any maintenance operation. It is proof that Fairmont progress spells real results in better railroading everywhere.

FAIRMONT RAILWAY MOTORS, INC., FAIRMONT, MINNESOTA

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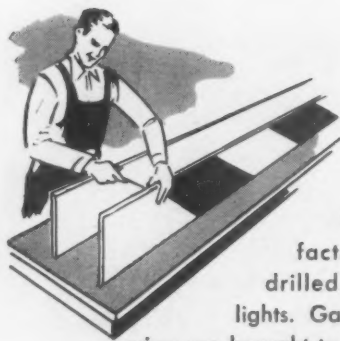
MODEL 10 automatic signals

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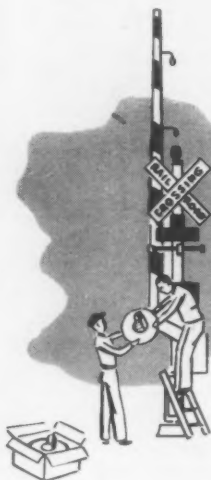
by the men who specify them

... install them

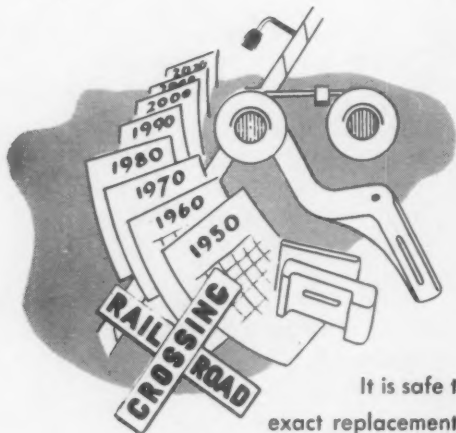
... maintain them



Gate arms are factory wired and drilled for mounting lights. Gate arm light unit wires are brought to special terminal blocks. Light units can be mounted and connected in a few minutes, without special tools.



Model 10 units are furnished complete. No time is wasted at point of installation, making units fit, or doing unexpected wiring. Flashing light units are shipped complete with hoods and backgrounds assembled, each in a carton.



It is safe to say that exact replacement parts for WRRS Model 10's will be available always — 10, 20, 30, or 50 years from now.

See us at the
St. Louis Convention
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Talk to any of the men who have a hand in grade crossing safety. They'll tell you plenty of reasons why they prefer Model 10 protection.

Officials will cite the unrivaled safety record set by thousands of Model 10's guarding busy railroad-highway crossings in America and in foreign countries: *not a single accident has ever occurred as a result of operation failure on the part of these signals.*

Field men who install Model 10's like the fact that WRRS makes the job easy. Factory assembly of components, and intelligent packaging of units save time — speed installation to completion.

Maintenance men praise Model 10's trouble-free, all weather operation, easy inspection and servicing. Replacement parts readily obtainable, are precise duplicates of originals. They fit perfectly.

Wherever You Go

Model 10's are rated "first" by the men concerned with "safety first."

WESTERN RAILROAD SUPPLY CO.
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Model 10



AUTOMATIC GRADE CROSSING SIGNALS
PRODUCT OF
WESTERN RAILROAD SUPPLY COMPANY
CHICAGO 8, ILLINOIS

LEADING MANUFACTURER OF GRADE
CROSSING SAFETY DEVICES — MAKER
OF RAILWAY SIGNALING ACCESSORIES



Current Publications

PERIODICAL ARTICLES

CAN RAILROADS AND TRUCKERS MAKE HAY TOGETHER? *Business Week*, September 12, 1953, pp. 110-116. McGraw-Hill Publishing Company, 330 W. 42nd St., New York 36. Limited supply of tear-sheets available free.

A pro and con discussion of the trailers-on-flat car service being offered by some railroads and truckers.

PINT-SIZED TRAINS SHOW PLENTY OF PULL. *Business Week*, September 12, 1953, pp. 182-188. McGraw-Hill Publishing Company, 330 W. 42nd St., New York 36. Limited supply of tear-sheets available free.

Miniature Train Company, Rensselaer, Ind., builds scale models of cars, locomotives and signals which are used in amusement parks, public parks and "kiddielands" throughout the country, with other uses for them being developed. Major railroads have allowed their colors and insignia to be used, and then cooperate with the train purchasers in setting up and maintaining track layouts.

BOOKS

RAILWAYMEN'S GALLERY, by Roger Lloyd. 166 pages, illustrations. George Allen & Unwin, Ltd., London, England. Available from Macmillan Company, 60 Fifth ave., New York 11. \$3.

Mr. Lloyd frankly admits to being an amateur, and refers to this collection as "fugitive pieces." He thanks professional railway men for the many courtesies they have extended to him and then continues: "The amateur who receives all this hospitality has his corresponding obligations. One of them is that he should regard the railway system as a serious and rewarding field of study; and another is that he should do what he can to communicate to others something of the endless interest and satisfaction which has been made possible for him. These fugitive pieces, scattered and almost random pictures in a gallery, have these aims. The first five of them are historical . . . They are also intended to illustrate the great variety of the strands which railwaymen down the ages have had to weave together to make it possible for the 8:50 to leave for London every morning. For the study of railways is something far bigger and more complex than a knowledge of locomotive design, timetables, signalling, and how coaches and waggons are built. Once you start studying railways seriously you find you have to learn something about almost everything else before you can see a railway system as a whole and as it really is. The last two pictures in the gallery are much simpler, for they try to communicate experience, to do in prose what a railway photographer does with his camera." The "gallery" has eight chapters: pioneers! O pioneers!; the old English navy; decline and fall of the Euston empire, 1848-1858; portrait of a Victorian rail-

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25 YEARS of Rail Testing "KNOW-HOW"

- Locates more and smaller defects
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- Costs less per detected defect than any other method

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PROVIDES THE MOST ECONOMICAL INSURANCE
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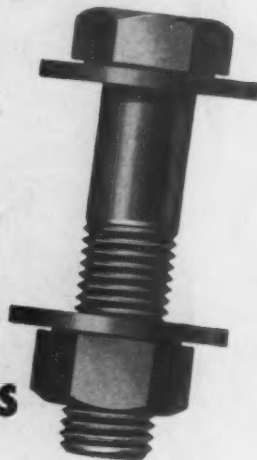
St. Louis



a long way from Casey's day

Long gone are the days of the smoke-eating, let's-live-dangerously type of railroader. The improvement of railroad rolling stock has been swift and sure. And now, to keep pace with this progress, comes the development of the *Lamson High-Strength Structural Steel Bolt*.

Lamson HIGH-STRENGTH STRUCTURAL STEEL BOLTS



The High-Strength Bolt offers lower construction cost, little or no maintenance or inspection and safety-to-spare to the men who build railroad bridges and other structural units.

Lamson and Sessions, one of the pioneers in the structural steel bolting field, has prepared the full story in an interesting and informative folder. This folder is yours for the asking . . . just write to . . .

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Large Bolts • Cotters
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way; railway towns; the Highland Railway at war, 1939-1945; behind Christmas scenes at Crewe; and a railwayman's view of the Highlands.

POCKET GUIDE TO AMERICAN LOCOMOTIVES, by Walter A. Lucas. 290 pages, illustrations. Simmons-Boardman Publishing Corporation, 30 Church st., New York 7. \$4.50.

This locomotive identification volume describes and illustrates practically every type of steam, diesel and electric locomotive now or recently in service on United States and Canadian railroads. It has been written in response to popular demand for an illustrated guide book that will provide the model maker with a single source of motive power information, and that will supply the railfan with a handy reference volume containing photographs and detailed data on just about every locomotive he is apt to see on American railroads. But it is, also, a basic book that professional railroaders will welcome as a convenient up-to-date survey of all types of modern motive power.

The steam locomotive section is arranged according to the well-known Whyte system of wheel arrangement. The diesel section is arranged by builder because such locomotives are a standardized product of each manufacturer. Straight electric locomotives are shown according to their axle arrangements as designated by the A.A.R. standard system for locomotives having electric transmission. Noteworthy features peculiar to certain locomotives are described, and operating and performance data, as well as principal dimensions and characteristics, of each locomotive pictured are supplied.

AN ECONOMIC INVESTIGATION OF SOLID JOURNAL BEARING OPERATION IN FREIGHT SERVICE ON TWO LARGE CLASS I RAILWAYS—UNIVERSITY OF ILLINOIS EXPERIMENT STATION, BULLETIN SERIES NO. 406, by Roy M. Wright, late research assistant professor in mechanical engineering; Donald E. Taylor, special research assistant in mechanical engineering; Robert Ferrer, research associate professor of economics in Bureau of Economic and Business Research; and Frances D. Dotson, research assistant in Bureau of Economic and Business Research and in mechanical engineering. 110 pages, graphs. \$1.

This is a report of investigations conducted on two large railroads to determine both direct and indirect costs traceable to use of solid journal bearings on freight cars in the years 1948 and 1951.

The study of costs of solid bearing operation included evaluation of costs of all types of hot boxes; costs of accidents and fires resulting from hot boxes; costs of materials; costs of routine inspection and lubrication, and costs of turning axle journals and collars. A study also was made of intangible costs arising from the special characteristics of solid journal bearings. These include fuel, tonnage reductions, loss and damage, and draft-gear and

coupler maintenance. One section of the report is devoted to investigations of various factors influencing development of hot boxes, and, following a summary of results and conclusions, six appendices describe methods of processing data on which conclusions are based. Total determined costs of solid-bearing operation per 1,000 freight-car-miles was found to be \$5.33 in 1948 and \$7.59 in 1951 for Railroad A, and \$5.43 in 1948 and \$8.53 in 1951 for Railroad B. While bearing service failures are matters of great interest and concern, they and the accidents and fires of which they are the causes were responsible for but 20 and 26 per cent of the total determined costs for the two railroads, respectively, in 1948 and 28 and 34 per cent in 1951.

In appraising the effect of undetermined costs, the report points out that, even though a small percentage of these costs may arise from special characteristics of solid bearings, they are so large in the aggregate that even a small percentage of them would constitute a very appreciable addition to the determined costs of operating solid bearings.

Studies of factors influencing development of hot boxes led to the conclusion that the tendency to develop hot boxes was increased by atmospheric temperature either higher or lower than about 40 deg. F., by increasing car weight, and by increasing train speed. Of defects on cars which result in interruption of service, hot boxes are the most prevalent. Sample studies of freight train delays due to mechanical failure of car equipment showed the percentage of delay due to hot boxes was 73.7 on Railroad A and 79.3 on Railroad B.

FILMS

RESISTANCE WELDING OF STAINLESS STEEL. 16-mm., 22-min., sound, color. Allegheny Ludlum Steel Corporation, 2020 Oliver bldg., Pittsburgh 22. Free loan.

Discusses spot welding, seam welding, projection welding and butt welding, and makes generous use of animation and drawings to clarify the regular picture material.

225,000-MILE PROVING GROUND. 16-mm., 19-min., sound, color. Princeton Film Center, Inc., Princeton, N. J. Free loan; user pays postage both ways.

This film, sponsored by the Association of American Railroads, replaces two older railroad films—*On the Track*, and *Whistle in the Night*—both of which have been withdrawn. The new film tells the behind-the-scenes story of how America's vast railroad network keeps up to maximum efficiency through continual research, invention and investment. It reveals the inside story of the central research laboratory, spotlights the spectacular changeover from steam to diesel power, and brings the viewer up to date on push-button freight yards, centralized traffic control and many other aspects of modern railroading.

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Torque-Control

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POWER CONTROL
WEAR CONTROL

- NO JERKING, slip-clutching or racing engines!
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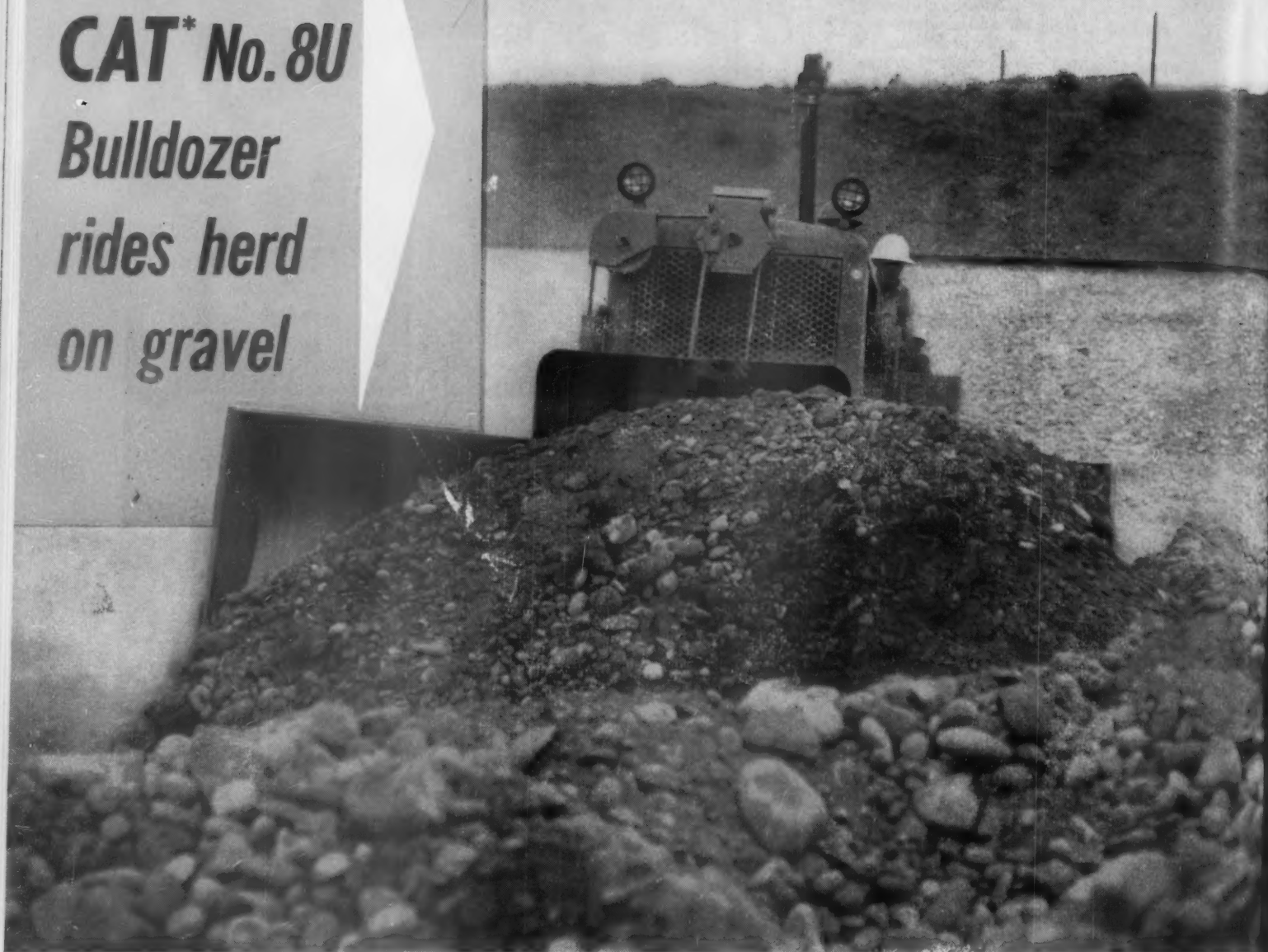


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*How a
CAT* No. 8U
Bulldozer
rides herd
on gravel*



Here's a 'dozer scientifically designed for handling heaping yardage — and keeping it rolling with a minimum of spillage. The U-shaped blade rounds up material and really rides herd on it.

You can see what it's working in on this operation. It's feeding coarse gravel to a crushing plant, which produces 1½" material for railroad ballast. Power and stamina are needed to stay in there pitching day after day, and this rugged yellow 'dozer qualifies on both counts.

The D8 delivers 130 HP at the drawbar, with the capacity of the 8U blade matched to this power for top performance. Tracks and roller frames are built to last. Diagonal braces keep the tracks in line, yet leave them free to oscillate. The blade is of special high tensile steel for long, hard wear. And it responds readily and steadily, even in rough going, to precision cable control.

All these and many other advantages mean money-saving production along the right of way or in the yard, where there

are always jobs to keep a 'dozer busy. Removing snow, clearing culverts, widening drainage facilities, building up fills, on switch and spur roadbed construction — name almost any heavy-duty chore, the 'dozer is a tool for it.

No other manufacturer offers so many different models of 'dozers as Caterpillar. This complete line is backed by prompt service from your Caterpillar Dealer. He'll be glad to show you what one of these husky units can do for you. Pick your toughest job and call him today!

Caterpillar Tractor Co., Peoria, Illinois.

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**NAME THE DATE...
YOUR DEALER
WILL DEMONSTRATE**

To File
Tear Here



REVENUES AND EXPENSES OF RAILWAYS

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)
MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1953

Average mileage operated during period	Name of Road	Operating Revenues			Total			Operating Expenses			Total			Operating			Net						
		Pass.	Freight	Total (inc. misc.)	1953	1952	1951	1953	1952	1951	1953	1952	1951	1953	1952	1951	1953	1952	1951				
171	Akron, Canton & Youngstown.....	July	\$526	\$543	337	357	58	38	63	60	13	536	379	490	116	306	309	85.8	86.6	86.6	31	13	3
7 mos.			1,711	1,766	1,111	1,111	368	326	45	479	415	112	1,068	2,194	2,138	84.2	80.3	80.3	41.1	195	128	136	136
13,095	Albany, Troy & Saratoga.....	July	3,664	3,770	3,141	491	513	47	361	382	107	107	279	1,002	2,367	2,367	73.8	73.8	73.8	60	48	39	39
7 mos.			48,852	51,140	36,367	37,779	8,680	667	8,336	8,336	111	111	116	997	2,156	2,089	78.5	78.5	78.5	336	278	267	267
13,095	Albany, Troy & Saratoga.....	July	308,852	29,518	387,992	348,004	53,348	49,655	4,638	64,900	63,696	11,966	8,340	108,719	244,538	244,538	68.0	70.3	70.3	11	8	11	11
7 mos.			2,810	2,291	2,295	34	40	3	23	18	4	29	58	477	998	1,029	46.8	50.5	50.5	154	46	42	42
82	Atlanta & St. Andrews Bay.....	July	2,174	10	2,236	2,104	211	248	152	164	164	29	7	477	998	1,029	46.8	48.9	48.9	123	358	330	330
93	Atlanta & West Point.....	July	263	46	357	357	58	38	63	60	13	536	379	490	116	306	309	85.8	86.6	86.6	31	13	3
7 mos.			1,973	288	2,665	2,665	368	326	45	479	415	112	1,068	2,194	2,138	84.2	80.3	80.3	41.1	195	128	136	136
133	Western of Alabama.....	July	309	44	368	368	39	52	8	63	63	17	116	143	283	294	73.4	79.8	73.4	102	60	48	39
7 mos.			2,195	278	2,745	2,704	401	349	50	483	475	111	116	997	2,156	2,089	78.5	77.3	589	336	278	267	267
205	Atlantic & Danville.....	July	153	....	153	131	22	2	15	20	11	11	83	48	55	118	83.0	88.4	88.4	26	11	8	11
205	Atlantic & Danville.....	July	1,154	....	1,169	1,113	243	239	13	105	92	33	84	359	857	857	74.8	76.9	294	73	50	55	55
5,379	Atlantic Coast Line.....	July	9,550	1,534	12,163	11,903	2,482	2,746	157	3,460	3,223	536	379	4,905	11,822	11,470	97.2	96.4	97.2	341	201	115	115
7 mos.			81,479	13,058	102,537	104,487	17,155	17,047	1,094	1,487	1,221	379	3,473	37,028	85,522	70,531	75.4	75.4	16,920	8,375	5,600	7,712	7,712
343	Charleston & Western Carolina.....	July	343	343	4,151	3,946	1,046	959	33	702	782	297	120	118	315	319	80.9	80.9	1,119	525	570	380	380
7 mos.			4,151	12	4,274	3,946	5,326	3,741	457	8,325	6,402	1,027	939	15,665	32,129	25,648	80.6	87.3	7,750	2,483	3,884	2,416	2,416
6,186	Baltimore & Ohio.....	July	35,046	2,026	39,579	29,309	5,326	3,741	457	8,325	6,402	1,027	939	15,665	32,129	25,648	80.6	87.3	7,750	2,483	3,884	2,416	2,416
7 mos.			239,473	13,279	270,498	246,309	35,309	32,266	3,782	57,161	52,366	7,102	6,357	102,689	213,384	200,909	78.9	81.6	57,115	20,820	27,664	23,531	23,531
29	Staten Island Rapid Transit.....	July	226	48	279	322	46	61	14	26	29	2	2	137	242	286	86.6	88.7	38	36	19	28	28
7 mos.			1,666	349	2,045	2,121	423	386	91	213	231	14	12	1,024	1,894	1,881	92.6	86.6	150	254	263	138	138
602	Bangor & Aroostook.....	July	700	39	777	693	200	250	18	234	209	91	21	247	763	768	98.2	110.9	14	80	129	15	15
7 mos.			8,120	237	8,655	8,321	1,900	1,720	120	1,639	1,633	609	94	2,160	6,294	6,194	72.7	74.4	2,361	1,249	1,413	1,110	1,110
213	Bessemer & Lake Erie.....	July	3,212	....	3,230	1,038	274	110	22	772	263	125	20	502	1,660	740	51.4	71.3	1,570	1,090	700	248	248
7 mos.			17,489	4	17,630	11,833	1,508	1,352	170	5,187	4,011	911	116	3,191	10,669	9,139	60.5	77.2	6,961	1,090	700	248	248
1,679	Boston & Maine.....	July	5,265	1,078	7,159	6,842	1,364	1,452	166	1,103	1,123	175	114	3,061	5,976	6,128	83.5	89.6	1,182	556	275	94	94
7 mos.			39,783	6,628	52,204	50,757	9,236	9,523	1,188	7,934	7,959	1,252	810	21,901	42,284	42,544	81.0	83.8	9,920	4,438	2,807	1,900	1,900
35	Cambria & Indiana.....	July	134	....	134	56	21	20	1	83	59	22	....	132	132	102	98.9	180.7	1	62	73	16	16
7 mos.			1,043	....	1,044	891	131	119	5	663	564	157	1	151	990	890	94.8	99.9	54	450	540	344	344
234	Canadian Pacific Lines in Maine.....	July	281	59	376	317	133	130	5	90	78	17	8	185	433	393	115.0	123.8	56	29	110	150	150
7 mos.			3,957	345	4,521	4,372	864	864	36	1,010	701	119	57	1,751	3,727	3,413	82.4	78.1	794	198	320	233	233
90	Canadian Pacific Lines in Vermont.....	July	194	10	228	184	124	83	4	31	23	....	7	128	301	243	131.9	132.1	73	16	148	125	125
7 mos.			1,372	83	1,596	1,530	531	481	28	262	218	....	40	1,062	1,999	1,973	101.4	101.4	....	....	....	....	....
1,786	Central of Georgia.....	July	2,027	183	3,461	3,269	571	607	46	570	618	120	138	1,402	4,899	2,974	83.8	84.5	562	238	964	110	110
7 mos.			22,651	1,373	26,053	25,551	4,711	4,182	425	4,999	4,275	821	960	9,877	20,610	21,328	79.3	84.5	5,443	2,386	2,433	1,532	1,532
617	Central of New Jersey.....	July	4,516	506	5,300	5,056	738	719	91	971	826	180	85	2,304	4,309	4,087	81.3	80.8	991	483	414	342	342
7 mos.			31,238	3,252	36,779	36,404	4,996	4,695	625	7,286	6,811	1,213	566	15,364	29,732	29,518	80.8	81.1	7,047	3,313	2,753	2,437	2,437
422	Central Vermont.....	July	789	90	959	755	247	192	18	115	145	13	14	381	801	801	83.6	106.1	158	45	27	120	120
7 mos.			5,887	413	6,781	6,332	1,439	1,281	114	927	1,154	87	114	2,612	5,394	5,762	79.5	91.0	1,387	295	456	27	27
5,114	Chesapeake & Ohio.....	July	26,204	807	28,682	23,628	3,718	3,924	375	5,607	5,625	1,490	712	9,230	20,611	19,892	72.0	84.2	8,021	3,662	4,815	2,343	2,343
7 mos.			185,293	4,947	199,677	205,164	27,440	29,169	2,534	38,461	42,645	10,329	4,820	62,583	142,449	151,281	71.3	73.7	57,228	26,080	33,382	29,004	29,004
868	Chicago & Eastern Illinois.....	July	2,658	303	3,214	2,773	444	393	28	528	468	125	130	1,089	2,376	2,183	73.9	78.7	838	323	414	314	314
7 mos.			17,330	1,866	21,330	19,660	2,678	2,530	197	3,707	3,116	870	916	7,753	16,156	14,966	75.7	75.7	5,174	1,719	2,528	2,290	2,290
130	Chicago & Illinois Midland.....	July	749	....	776	434	78	33	6	152	96	23	30	214	518	403	66.7	92.8	258	138	97	24	24
7 mos.			4,972	1	5,008	3,885	581	453	56	1,078	1,035	162	223	1,554	3,768	3,373	74.1	86.8	1,320	692	451	33	33
7,874	Chicago & North Western.....	July	14,064	2,308	18,273	16,102	3,432	2,929	36	3,428	2,927	812	373	7,956	13,970	14,867	87.4	92.3	2,303	1,118	240	501	501
7 mos.			91,278	13,036	116,824	111,601	20,306	18,902	2,341	22,198	22,211	5,470	2,647	53,041	104,133	103,534	89.1	92.8	12,689	7,558	3,612	2,906	2,906
8,867	Chicago, Burlington & Quincy.....	July	21,289	2,113	25,714	23,763	5,031	3,957	28	528	468	125	130	1,089	2,376	2,183	73.9	78.7	838	323	414	314	314
7 mos.			131,339	11,629	158,947	145,209	25,554	22,923	2,683	23,117	24,184	4,869	3,629	55,844	113,893	109,011	71.7	75.1	45,053	24,473	17,899	13,662	13,662
1,468	Chicago Great Western.....	July	2,737	30	2,962	2,850	475	511	43	352	368	120	116	912	1,936	2,083	65.4	73.1	1,025	349	396	214	214
7 mos.			14,976	82	16,115	15,917	2,681	3,365	259	1,917	2,062	87	785	5,101	11,088	13,014	68.3	70.4	5,110	1,965	2,168	2,024	2,024
541	Chicago, Indianapolis & Louisville.....	July	1,675	60	1,732	1,678	385	319	22	284	302	70	86	639	1,488	1,441	79.5	85.8	5,110	1,965	2,168	2,024	2,024
7 mos.			11,365	444	12,690	12,451	3,365	2,407	122	1,888	1,926	487	612	4,869	9,959	9,846	78.5	79.1	2,582	1,168	1,102	60	60
10,670	Chicago, Milwaukee, St. Paul & Pacific.....	July	17,790	1,699	21,805	21,413	4,470	3,562	379	4,564	4,090	854	499	8,617	19,223	18,317	88.2	85.7	7,047	3,313	2,753	2,437	2,437
7 mos.			123,576	9,703	148,708	148,886	24,803	23,588	2,664	32,078	31,945	5,997	3,454	59,447	126,934	129,617	85.4	87.1	21,774	10,246	6,443	5,522	5,522
7,910	Chicago, Rock Island & Pacific.....	July	16,946	1,811	20,682	19,335	2,935	2,729	288	2,82													

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REVENUES AND EXPENSES OF RAILWAYS

REVENUES AND EXPENSES OF RAILWAYS

(Dollar figures are stated in thousands; i.e., with last three digits omitted)
MONTH OF JULY AND SEVEN MONTHS OF CALENDAR YEAR 1953

Average mileage operated during period	Name of Road	Operating Revenues			Operating Expenses			Deprec.			Total			Operating ratio			Net from railway operation			Railway Net railway income		
		Freight	Pass.	Total (inc. misc.)	Total	Retire-ments	Total	Retire-ments	Total	Trans-portion	Traffic	Total	1952	1953	1952	1953	1952	1953	1952	1953	1952	1953
729	Colorado & Southern.....	1,158	92	1,365	223	155	18	179	40	31	474	941	881	68.9	72.7	424	187	167	158	187	167	
731	Fl. Worth & Denver.....	7,850	478	8,662	1,170	1,041	137	1,271	1,421	257	3,169	6,210	6,252	67.7	72.2	2,961	1,582	1,291	1,291	1,582	1,291	
1,038	Colorado & Wyoming.....	11,840	959	13,610	2,115	2,088	270	1,841	1,712	241	4,527	9,589	9,834	69.0	73.7	4,302	1,657	1,923	1,923	1,657	1,923	
40	Columbus & Greenville.....	140	....	148	100	39	24	26	6	4	48	136	111	91.8	111.5	12	15	1	1	15	1
168	Delaware & Hudson.....	1,146	....	1,198	1,035	250	228	183	43	29	341	938	915	78.3	88.4	260	203	99	99	203	99
793	Delaware, Lackawanna & Western.....	2,731	1,070	4,801	3,265	4,703	477	5,762	6,728	1,174	1,572	24,341	26,021	76.5	79.7	7,474	2,343	5,365	5,365	2,343	5,365	
962	Denver & Rio Grande Western.....	5,892	856	7,408	6,611	1,022	957	1,329	320	178	3,255	6,058	5,910	81.8	89.4	1,350	644	693	693	644	693	
2,313	Detroit & Mackinac.....	6,301	412	6,992	5,729	1,305	962	1,114	1,082	252	2,178	4,591	4,591	73.7	80.1	1,838	996	756	756	996	756	
232	Detroit & Toledo Shore Line.....	185	....	190	177	43	7	23	24	9	5	40	125	63.1	70.8	38	29	22	22	38	29
50	Detroit, Toledo & Ironton.....	679	....	711	424	84	71	63	55	18	22	212	397	76.5	76.5	314	205	182	157	205	182
464	Duluth, Missabe & Iron Range.....	1,696	....	1,808	1,152	265	203	25	260	302	83	672	1,297	51.1	82.7	511	223	232	232	223	232
567	Duluth, South Shore & Atlantic.....	743	39	5,034	4,289	1,093	886	69	1,073	981	142	1,587	4,070	80.9	88.7	904	328	835	835	328	835	
175	Duluth, Winnipeg & Pacific.....	373	1	381	356	105	99	4	83	77	2	5	191	102.7	103.0	10	33	98	98	33	98	
236	Elgin, Joliet & Eastern.....	3,909	....	4,499	1,346	358	238	39	798	381	115	35	1,663	65.9	72.3	1,732	848	552	552	848	552
2,237	Erie.....	13,562	704	15,539	11,792	3,452	2,560	235	2,299	4,006	804	241	11,793	65.9	72.3	11,342	5,685	2,894	2,894	5,685	2,894	
571	Florida East Coast.....	1,398	408	1,943	1,971	410	371	63	565	484	78	74	886	73.6	79.0	28,219	11,931	11,671	11,671	11,931	11,671	
321	Georgia Railroad.....	680	42	776	2,203	2,626	2,571	315	3,792	3,546	545	528	7,618	101.0	101.0	144	222	10	10	222	10	
360	Georgia & Florida.....	352	....	5,603	5,647	846	815	58	955	902	214	242	2,925	83.7	83.7	1,011	262	130	130	262	130
952	Grand Trunk Western.....	4,619	259	5,237	3,775	897	809	50	807	523	89	71	2,341	82.5	92.2	919	320	219	219	320	219	
172	Can. Natl. Lines in New Eng.....	175	19	228	179	97	9	23	61	....	....	3	134	167.4	167.4	85.8	8.619	21.39	41.27	641	641
8,303	Great Northern.....	22,124	1,453	25,636	19,654	4,652	4,024	316	4,159	3,422	721	20	979	128.5	128.5	285	24	103	103	285	24	
224	Green Bay & Western.....	406	....	414	285	100	77	4	41	33	8	22	95	76.7	82.4	34,176	18,260	12,867	12,867	18,260	12,867
2,766	Gulf, Mobile & Ohio.....	48,371	2,690	54,666	52,233	8,254	8,490	487	9,805	9,251	1,817	1,841	15,613	69.6	71.1	16,644	7,619	6,627	6,627	7,619	6,627	
6,538	Illinois Central.....	21,244	1,896	25,376	22,610	4,064	3,888	367	3,651	2,992	719	504	8,833	71.3	73.8	7,285	3,992	2,851	2,851	3,992	2,851	
355	Illinois Terminal.....	966	63	1,152	1,162	183	168	25	191	167	41	46	407	72.9	75.5	47,793	26,284	18,010	18,010	26,284	18,010	
891	Kansas City Southern.....	3,365	165	3,863	3,565	604	388	36	508	481	92	30	2,214	80.5	81.6	1,425	609	532	532	609	532	
327	Kansas, Oklahoma & Gulf.....	564	1,002	28,577	26,937	3,487	2,977	245	3,500	3,275	640	623	8,225	54.8	57.7	5,039	4,974	4,382	4,382	4,974	4,382	
156	Lake Superior & Ishpeming.....	554	....	684	165	65	38	12	54	53	16	2	124	52.3	54.1	1,956	953	766	766	953	766
96	Lehigh & Hudson River.....	287	....	2,999	2,226	44	49	2	27	28	8	13	86	78.6	78.6	1,062	566	591	591	566	591
180	Lehigh & New England.....	731	....	4,450	636	90	77	6	143	128	38	13	205	68.8	68.8	223	141	139	139	223	141
1,164	Lehigh Valley.....	5,954	361	6,683	5,237	931	923	94	1,111	1,060	209	141	2,626	75.7	92.0	1,626	558	933	933	558	933	
365	Long Island.....	1,206	....	4,995	4,841	641	641	86	975	838	121	14	2,280	77.9	77.9	11,341	4,262	6,134	6,134	4,262	6,134
365	Long Island.....	8,647	22,185	32,509	30,383	4,559	4,284	596	6,240	5,506	849	103	15,813	85.8	90.6	4,621	2,760	915	915	2,760	915	

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Average mileage operated during period	Name of Road	Operating Revenues			Total			Deprec.			Operating Expenses			Operating Ratio			Net income				
		Pass.	Freight	Total	1953	1952	Retire- ments	Total	1953	1952	Retire- ments	Traffic	Trans- portation	Total	1953	1952	Operating ratio	1953	1952	Railway tax operating income	
756	Louisiana & Arkansas.....	59	2,430	2,137	51	47	11	18	20	4	5	59	143	140	66.2	74.2	73	28	23	28	
7 mos.	Louisiana & Arkansas.....	409	17,667	15,238	315	335	44	147	147	44	36	412	924	1,023	64.6	86.0	507	225	168	—	
7 mos.	Louisville & Nashville.....	1,280	19,592	16,024	2,768	2,482	145	1,983	1,824	605	530	4,360	10,133	9,374	73.7	61.5	734	339	356	355	
7 mos.	Louisville & Nashville.....	7,658	138,369	129,460	19,138	19,151	1,536	27,095	28,340	786	365	6,606	14,452	14,399	73.8	89.9	5,141	2,936	2,822	963	
7 mos.	Maine Central.....	159	1,590	1,232	479	488	78	365	387	71	19	733	1,768	1,710	86.8	83.1	39,264	20,047	13,126	1,020	
7 mos.	Maine Central.....	837	13,254	16,097	3,253	3,036	370	2,504	2,694	504	150	5,233	11,731	12,018	76.8	74.7	3,549	1,623	1,502	1,623	
334	Midland Valley.....	213	213	108	51	47	11	18	20	4	5	59	143	140	66.2	74.2	73	28	23	28	
7 mos.	Midland Valley.....	1,431	1,431	1,089	315	335	44	147	147	44	36	412	924	1,023	64.6	86.0	507	225	168	—	
7 mos.	Minneapolis & St. Louis.....	12	1,794	1,481	1,794	1,481	44	1,794	1,481	44	126	412	924	1,023	64.6	86.0	507	225	168	—	
7 mos.	Minneapolis & St. Louis.....	3,397	11,996	12,393	2,323	2,188	217	1,853	1,992	535	472	4,074	9,910	9,880	79.3	80.0	2,580	1,459	1,052	890	
7 mos.	Min., St. Paul & S. Ste. Marie.....	145	3,622	3,726	845	852	47	693	582	101	92	1,391	3,174	3,029	79.0	81.0	841	255	558	387	
7 mos.	Mississippi Central.....	582	22,172	22,598	5,307	4,915	337	4,694	4,828	688	542	8,918	20,392	20,452	92.0	90.5	1,780	1,618	539	361	
7 mos.	Mississippi Central.....	220	197	58	48	2	52	27	27	6	14	52	186	180	84.7	91.3	34	35	35	—	
7 mos.	Missouri-Illinois.....	148	1,616	1,551	378	312	15	229	167	27	96	429	1,204	1,112	73.5	71.7	435	178	173	150	
7 mos.	Missouri-Illinois.....	529	529	433	74	84	4	70	67	22	10	121	287	301	54.2	69.5	242	161	87	60	
7 mos.	Missouri-Kansas-Texas Lines.....	1	3,503	2,993	537	513	27	530	503	144	63	843	2,039	1,967	58.2	65.7	1,464	886	635	495	
7 mos.	Missouri-Kansas-Texas Lines.....	292	7,547	7,146	1,231	1,041	108	1,178	1,082	233	259	2,494	5,479	5,185	72.6	72.6	2,068	904	842	764	
7 mos.	Missouri Pacific.....	1,967	51,424	48,532	7,571	6,880	726	7,783	7,003	1,604	1,795	17,268	36,620	35,064	71.2	72.2	14,804	6,377	5,939	5,438	
7 mos.	Missouri Pacific.....	1,105	22,120	22,252	3,925	3,554	196	4,186	4,127	752	474	7,448	16,711	16,359	75.5	73.5	5,409	1,959	2,779	2,797	
7 mos.	International-Great Northern.....	6,935	122,461	6,692	141,862	140,068	26,194	263	27,783	26,666	5,171	3,296	50,760	112,626	108,838	79.4	77.7	29,236	15,436	15,659	—
7 mos.	International-Great Northern.....	1,104	2,757	1,93	3,148	2,932	659	605	568	116	64	1,256	2,720	2,586	86.4	88.2	4,282	51	347	203	
7 mos.	International-Great Northern.....	1,138	22,920	21,880	5,001	4,623	273	4,917	3,973	774	42	8,742	18,838	18,507	82.2	84.6	4,082	907	2,377	1,623	
7 mos.	Gulf Coast Lines.....	1,723	3,201	3,538	3,486	825	772	57	556	580	110	97	1,187	2,928	2,809	79.9	80.5	710	169	439	491
7 mos.	Gulf Coast Lines.....	651	26,463	25,929	5,967	5,205	292	3,805	3,848	753	630	8,259	19,729	19,045	74.5	73.4	6,733	2,081	3,315	3,135	
178	Monongahela.....	510	510	454	92	70	261	72	60	10	1	223	401	342	78.1	75.4	113	Cr.	3	—	
7 mos.	Monongahela.....	4,262	4,660	910	623	380	497	567	65	7	1,606	3,086	3,016	72.4	64.7	1,176	226	—	—	287	
7 mos.	Montour.....	186	186	62	33	10	3	69	51	19	1	62	175	122	93.5	197.5	1,176	226	—	—	
7 mos.	Montour.....	1,473	1,473	1,242	218	142	18	540	520	132	7	484	1,318	1,290	99.1	103.8	1,161	306	308	955	
7 mos.	Nashville, Chatt. & St. Louis.....	189	3,156	3,376	528	617	44	455	481	137	120	1,433	2,543	2,464	74.3	73.2	76	89	345	451	
7 mos.	Nashville, Chatt. & St. Louis.....	1,049	23,335	3,594	7,571	3,56	336	3,495	3,583	917	828	7,974	16,798	17,071	71.3	71.3	6,772	3,350	4,413	3,107	
10,716	New York Central.....	51,577	10,200	69,787	57,748	10,271	4,254	13,495	12,587	2,923	1,117	29,273	57,581	50,503	82.5	87.5	12,206	5,536	5,214	1,101	
7 mos.	New York Central.....	38,721	68,401	48,512	451,127	451,127	66,566	98,117	95,705	16,417	7,696	204,618	400,605	392,353	82.6	87.0	84,588	39,609	35,434	15,735	
7 mos.	Pittsburgh & Lake Erie.....	221	3,886	497	30,136	29,95	1,923	715	715	282	524	1,388	3,270	2,146	79.2	138.4	857	711	1,132	263	
7 mos.	Pittsburgh & Lake Erie.....	13,724	158	14,907	3,704	3,695	332	7,461	7,399	1,921	524	9,841	23,575	21,575	76.8	91.2	6,988	5,071	8,076	4,504	
7 mos.	New York, Chicago & St. Louis.....	2,184	13,734	15,107	10,294	1,687	1,742	1,126	1,727	317	320	5,084	9,684	8,451	66.8	82.1	4,823	2,390	1,948	765	
7 mos.	New York, Chicago & St. Louis.....	93,261	1,145	97,704	87,746	11,731	1,132	1,075	15,362	14,528	2,244	2,207	33,532	66,066	62,519	67.6	71.2	31,638	15,868	13,900	10,921
7 mos.	New York, New Haven & Hartford.....	1,771	7,719	4,576	12,434	1,957	1,659	264	2,188	2,680	181	5,983	19,946	19,441	80.3	84.0	2,645	1,045	729	254	
7 mos.	New York, New Haven & Hartford.....	1,783	55,953	29,488	95,700	12,903	15,583	14,178	19,35	14,178	3,223	40,387	76,824	76,824	80.3	80.3	18,876	7,565	5,340	4,924	
7 mos.	New York Connecting.....	21	252	264	333	119	107	25	21	20	83	226	730	85.4	69.2	39	76	31	41
7 mos.	New York Connecting.....	21	2,200	2,478	2,334	582	598	175	188	196	654	1,446	1,402	58.4	60.1	1,032	526	493	437
7 mos.	New York, Ontario & Western.....	541	541	29	623	559	164	155	18	88	87	23	291	596	95.6	100.8	28	39	94	108	
7 mos.	New York, Ontario & Western.....	541	4,032	4,174	3,976	872	826	125	579	153	171	1,846	3,722	3,624	89.2	91.2	453	254	290	326	
120	New York, Susquehanna & Western.....	415	37	481	404	52	56	5	59	12	8	204	353	348	73.5	86.3	128	36	43	24	
7 mos.	New York, Susquehanna & Western.....	2,940	2,940	3,389	397	397	38	422	418	82	58	1,444	2,512	2,460	74.1	78.3	877	240	314	—	
7 mos.	Norfolk & Western.....	1,135	14,358	509	15,498	13,143	2,324	3,396	2,743	644	309	4,592	11,276	10,042	72.8	76.4	4,223	2,987	2,130	1,563	
7 mos.	Norfolk & Western.....	2,135	100,193	2,889	107,705	113,013	16,115	16,278	2,004	23,558	2,085	33,310	79,760	82,412	74.1	72.9	27,945	19,936	11,600	—	
7 mos.	Norfolk Southern.....	620	899	911	884	204	200	13	119	111	27	48	265	695	74.1	76.3	216	117	71	57	
7 mos.	Norfolk Southern.....	620	6,275	6,372	1,423	1,388	89	847	834	188	341	1,900	4,986	5,185	78.2	76.5	1,386	706	431	539	
6,880	Northern Pacific.....	907	16,768	14,445	3,221	2,827	241	3,070	2,940	430	350	6,029	13,462	12,308	80.3	85.2	3,305	1,956	1,625	852	
7 mos.	Northern Pacific.....	4,612	102,575	95,426	18,398	17,276	1,855	19,613	19,926	2,925	2,452	39,440	85,002	82,180	85.9	86.1	17,575	11,433	8,400	5,645	
7 mos.	Northwestern Pacific.....	331	1,091	1,149	1,143	332	245	54	125	116	5	312	838	852	76.6	75.5	292	451	125	31	
7 mos.	Northwestern Pacific.....	331	7,340	7,683	7,489	2,191	1,827	154	744	29	33	2,679	5,810	5,635	76.4	74.8	1,813	475	381	269	
7 mos.	Oklahoma City-Ada-Atoka.....	132	79	80	46	23	12	1	4	....	....	55	57	57	57.0	63.7	34	14	9	9
7 mos.	Oklahoma City-Ada-Atoka.....	132	632	677	150	166	16	13	32	32	13	142	340	400	53.5	59.1	295	104	111	78	
10,083	Pennsylvania.....	69,518	12,296	90,413	65,711	19,652	5,922	1,320	19,703	13,180	2,878	1,324	36,102	73,356	55,723	81.1	84.8	17,057	7,602	7,010	3,343
7 mos.	Pennsylvania.....	468,076	84,088	612,924	572,266	81,127	75,185	9,810	134,746	127,564	20,182	9,262	252,224	502,274	491,524	82.0	85.9	110,551	47,123	49,833	32,805
7 mos.	Pennsylvania-Reading Seaboard Lines.....	364	4,963	5,680	5,618	324	1,489	169	714	674	126	75	3,830	6,394	6,417	115.6	108.8	115	123	162	—
7 mos.	Pennsylvania-Reading Seaboard Lines.....	364	4,963	5,680	5,618	324	1,489	169	714	674	126	75	3,830	6,394	6,417	115.6	108.8	115	123	162	—
7 mos.	Pennsylvania-Reading Seaboard Lines.....	364	4,963	5,680	5,618	324	1,489	169	714	674	126	75	3,830	6,394	6,417	115.6	108.8	115	123	162	—

(Table continued on next page)

(Dollar figures are stated in thousands; i.e., with last three digits omitted)

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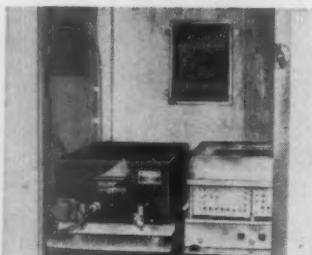
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RACK-MOUNTING

C-D vibrator converter installation showing rack-mounting with plug-in feature which simplifies wiring and facilitates installation.



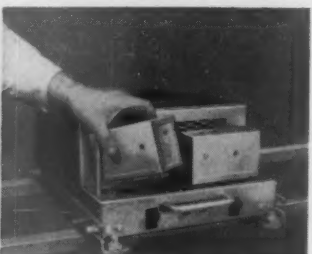
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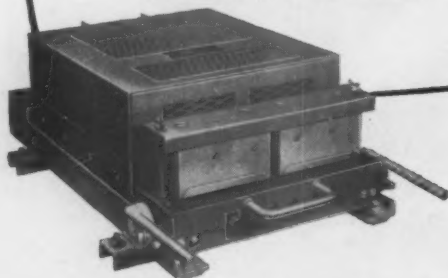
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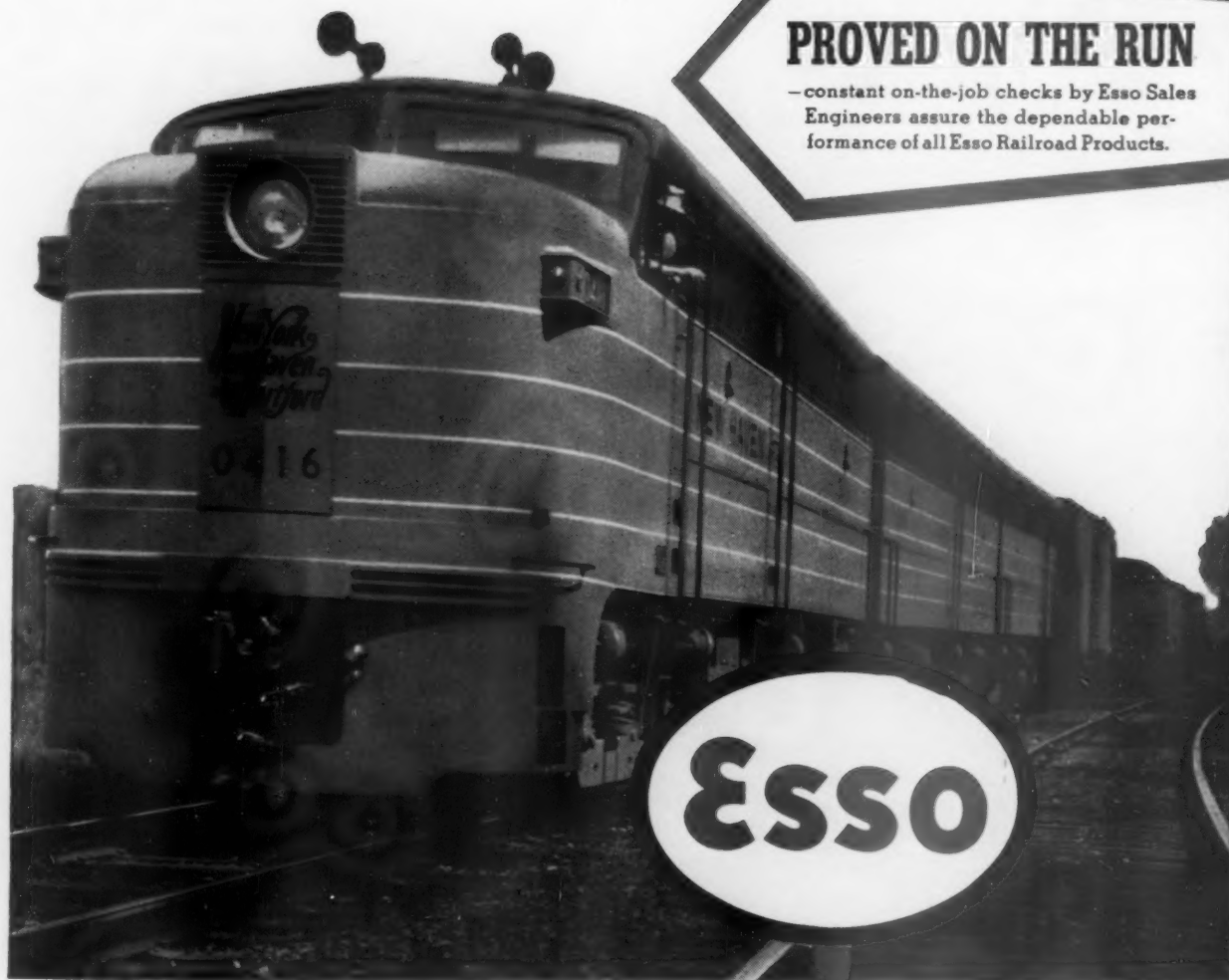
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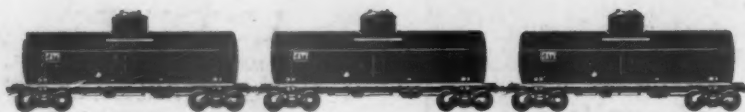
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